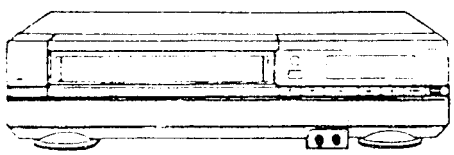
S/M Code No.89 – 095 DATE OF ISSUE 2/1990 – I

AIWA®

SERVICE MANUAL

HV-G50GPS/DIP
HV-G51GPS
HV-G53AGPS
HV-G55GPS /AGPS/IP



VIDEO CASSETTE RECORDER

BASIC VIDEO MECHANISM : TN – 5900

• TYPE: G50GPSH,DIPH G51GPSE G53AGPSE G55GPSE,AGPSE,IPK

AIWA Co., Ltd.

Tokyo Japan

Printed in Japan

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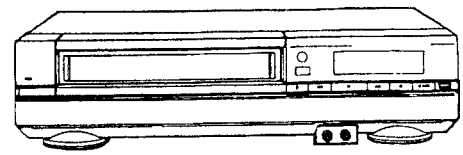
HV-G50IP
HV-DK510GPSKS

SERVICE MANUAL



VIDEO CASSETTE RECORDER

• BASIC VIDEO MECHANISM : TN – 5900

• TYPE. F (G50IP)
E (DK510GPSKS)

AIWA Co., Ltd.

Tokyo Japan

Printed in Japan

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SPECIFICATIONS

Recording/playback system
Video: Rotary 2 heads helical scan system
Audio: Fixed head

Video signal

HV-DK510
PAL/MESECAM color signal
625 lines, 50 Hz

HV-G50
PAL color signal
625 lines, 50 Hz

Recording/playback time
4 hours max. with E-240 tape, standard speed

Fast forward/rewind time
Less than 300 sec., with E-240 tape

Tape speed
Standard speed, 23.39 mm/sec.

Tape width
12.65 mm

Usable cassette
VHS video cassette

Timer display
24-hour cycle,
day, hour, minute,
digital fluorescent display

Timer recording
7 programs within 2 weeks
1 program for weekly recording

Time accuracy
±25 sec. or less (monthly)

Channel coverage

HV-DK510
B and G color TV system
VHF: E2–E4 and E5–E12 channels
UHF: E21–E69 channels
D and K color TV system
VHF: R1–R5, R6–R12 channels
UHF: R21–R60 channels

HV-G50
VHF: 4–13 channels
UHF: 21–68 channels

RF output
UHF channel between 30 and 39

RF output level
75 dB

Video input
0.5 – 2.0 Vp-p, 75 ohms unbalanced

Video output
1.0 Vp-p, 75 ohms unbalanced

Horizontal resolution
240 lines (nominal)

Video S/N (luminance)
43 dB (nominal)

Audio input
–10 dBs (nominal)

Audio output
–8 dBs, 2.2 k ohms

Audio frequency response
200 Hz – 8 kHz

Audio S/N
41 dB (nominal)

Operating temperature
5°C – 40°C

Power requirements

HV-DK510
110–240 V AC, 50/60 Hz

HV-G50
110 – 240 V AC, 50/60 Hz

Power consumption
21 watts

Dimensions
380 (W) × 95 (H) × 315 (D) mm

Weight Approx. 5.1 kg

- **Design and specifications are subject to change without notice.**

STANDARD MAINTENANCE

1. SERVICE SCHEDULE OF COMPONENT

○ : Check ● : Change

DECK		Periodic Service Schedule			
Ref. No.	Parts Name	1000 h	2000 h	3000 h	4000 h
2-2	UPPER DRUM	○	●	○	●
4-6	PINCH ROLLER A		●		●
3-32	CAPSTAN MOTOR ASSY		●		●
5-27	CLUTCH ASSY		●		●
4-46	LM ASSY			●	
6-22	MAIN BELT		●		●
3-5	BT BAND ASSY		●		●
5-29	DRIVE BELT		●		●
4-41	BRAKE SHOE		●		●
6-1	LOADING BELT		●		●
5-26	FL BELT		●		●
2-5	DRUM EARTH			●	
4-21	ACE HEAD HV225211			●	
3-25	REEL ASSY			●	
4-50	FULL ERASE HEAD			●	

NOTE :

1. Clean all parts for the tape transport.
   Upper Drum with video head / Pinch Roller A
   ACE Head / Full Erase Head

2. After cleaning up the parts, perform all DECK ADJUSTMENT.

2. CLEANING

1. CLEANING OF "VIDEO HEAD" (See Figure-1)

Head cleaning by using a chamois skin.

— Procedure —

1) Remove the "Cabinet, Steel".
2) Put on a glove (thin type) to avoid touching the "Upper drum" and "Lower drum" with bare hand.
3) Put a few drops of alcohol on the Chamois skin, and by slightly placing it against the "Head tip", allow the "Upper drum" to turn the right and left.

— Remark —

1) The video head is of very hard material, but since it is very thin, avoid cleaning it vertically.
2) Wait for the cleaned part to dry out, before operating the unit.
3) Do not reuse the Stained chamois skin.

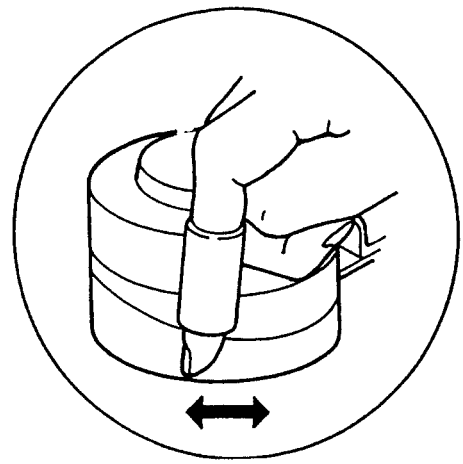


Fig-1

2. CLEANING OF "ACE HEAD" (See Figure-2)

Head cleaning by using a chamois skin.

— Procedure —

1) Remove the "Cabinet, Steel".
2) Put a few drops of alcohol on the chamois skin, clean up the "Audio control head", being careful not to damage the "Upper drum" and other tape running parts.

— Remark —

1) Avoid cleaning "ACE Head" vertically.
2) Wait for the cleaned part to dry well, before operating the unit.

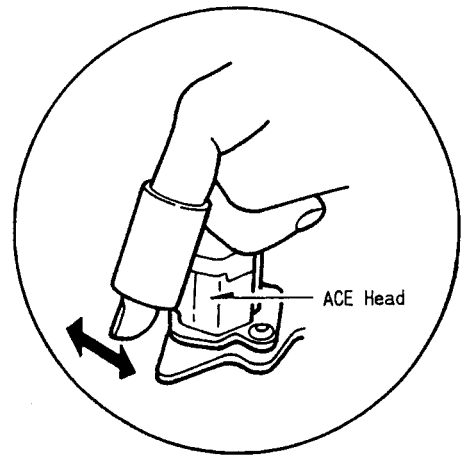
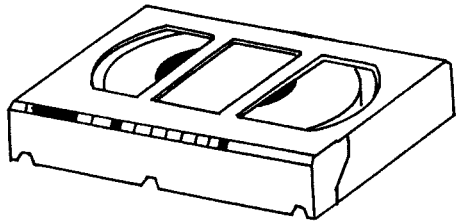


Fig-2

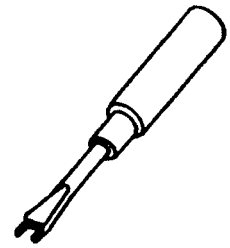
1. SERVICE JIG AND TOOLS

Ref. No.	Name	Adjustment
J-1	Torque Meter (FSJ-VHT-063)	Back Tension
J-2	Special Driver (SMALL)	Tape Running Position, Envelope Wave Form
J-3	Special Driver (LARGE)	X Value
J-4	Mirror	Tape Transportation Check
J-5	Alignment Tape (TTV-P2)	X Value, Envelope Wave Form, ACE Head Azimuth
J-6	Alignment Tape (TTV-P1)	ACE Head Height / ACE Head Tilt
J-7	Box Driver M3	Tape Running Position, X Value, Envelope Wave Form
J-8	EXT. PCB. KIT (A) (Parts No. 09-054-012-010)	HA (For repair of circuit board)

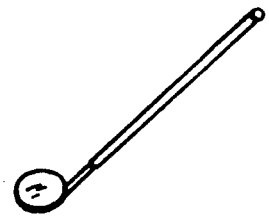
J-1, J-5, J-6



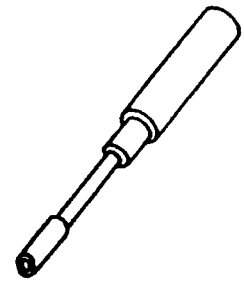
J-2, J-3



J-4



J-7



2. HOW TO ASSEMBLE THE JIGS

1. Assembling the J-8 (See Figure-1)

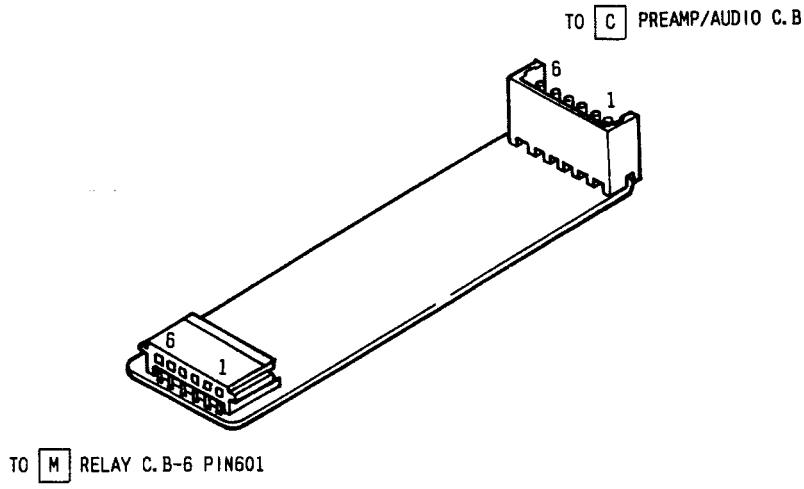


Fig-1

Place the circuit board with the solder side down as shown in the figure above and assemble the connectors, taking care of their directions.

2. Using the J-8 (See Figure-1)

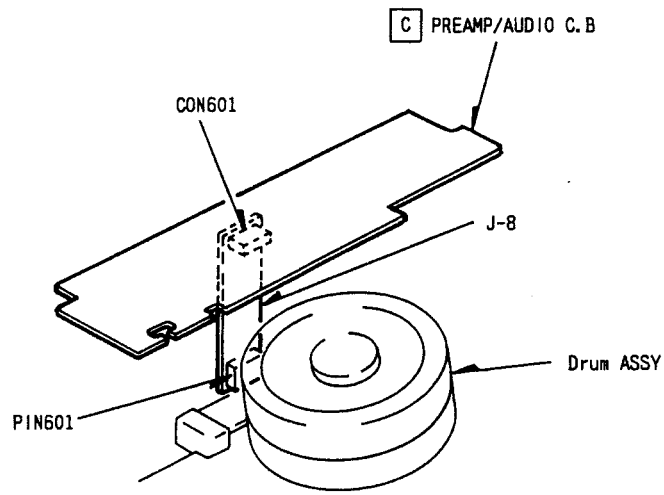


Fig-1

Use this jig when servicing the "Preamp/Audio circuit board".

DISASSEMBLY

1. "CABINET FRONT ASSY" REMOVAL (See Figure-1)
   1) Remove 4 screws (A) holding the "Cabinet, Steel".
   2) Remove 7 screws (B) holding the "Bottom, Plate".
   3) Remove 3 screws (C) and release 5 hooks to remove the "Cabinet front ASSY" in the direction of the arrow.

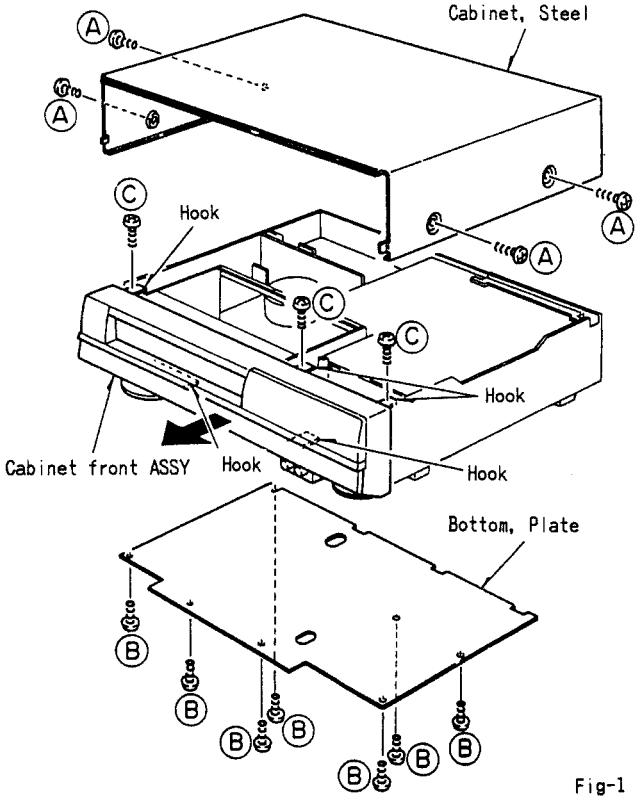


Fig-1

2. "POWER UNIT ASSY" AND "MAIN CIRCUIT BOARD" REMOVAL (See Figure-2)
   1) Remove 5 screws (A) holding the "Main circuit board".
   2) Remove 2 screws (B) and 2 screws (C) holding the "Power unit ASSY".

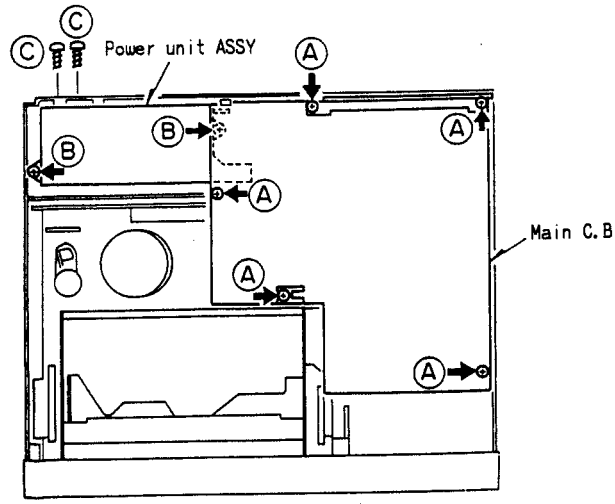


Fig-2

3. "MECHANISM ASSY" REMOVAL (See Figure-3)
   1) Remove screw (A) and disconnect the connector to remove the "Preamp/Audio circuit board" in the direction of the arrow.
   2) Remove 3 screws (B) holding the "Mechanism ASSY".

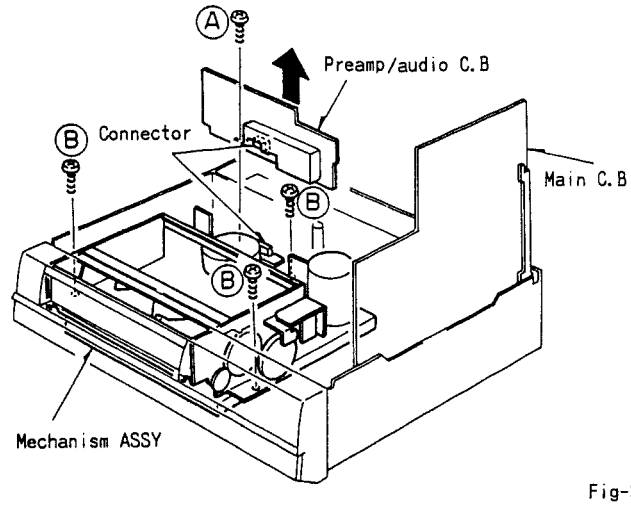


Fig-3

4. "FRONT LOADING ASSY" REMOVAL (See Figure-4)

1) Remove "Main belt".

2) Remove 4 screws Ⓐ.

3) Release the hooks on both sides and remove the "Front loading ASSY". (Since it is difficult to release these hooks, hold the front of the "Front loading ASSY" and shake it up and down to release them.)

5. "CASSETTE LOAD BRACKET ASSY" REMOVAL (See Figure-4)

1) Remove 1 screw Ⓑ.

2) Take off the "Cassette load bracket ASSY".

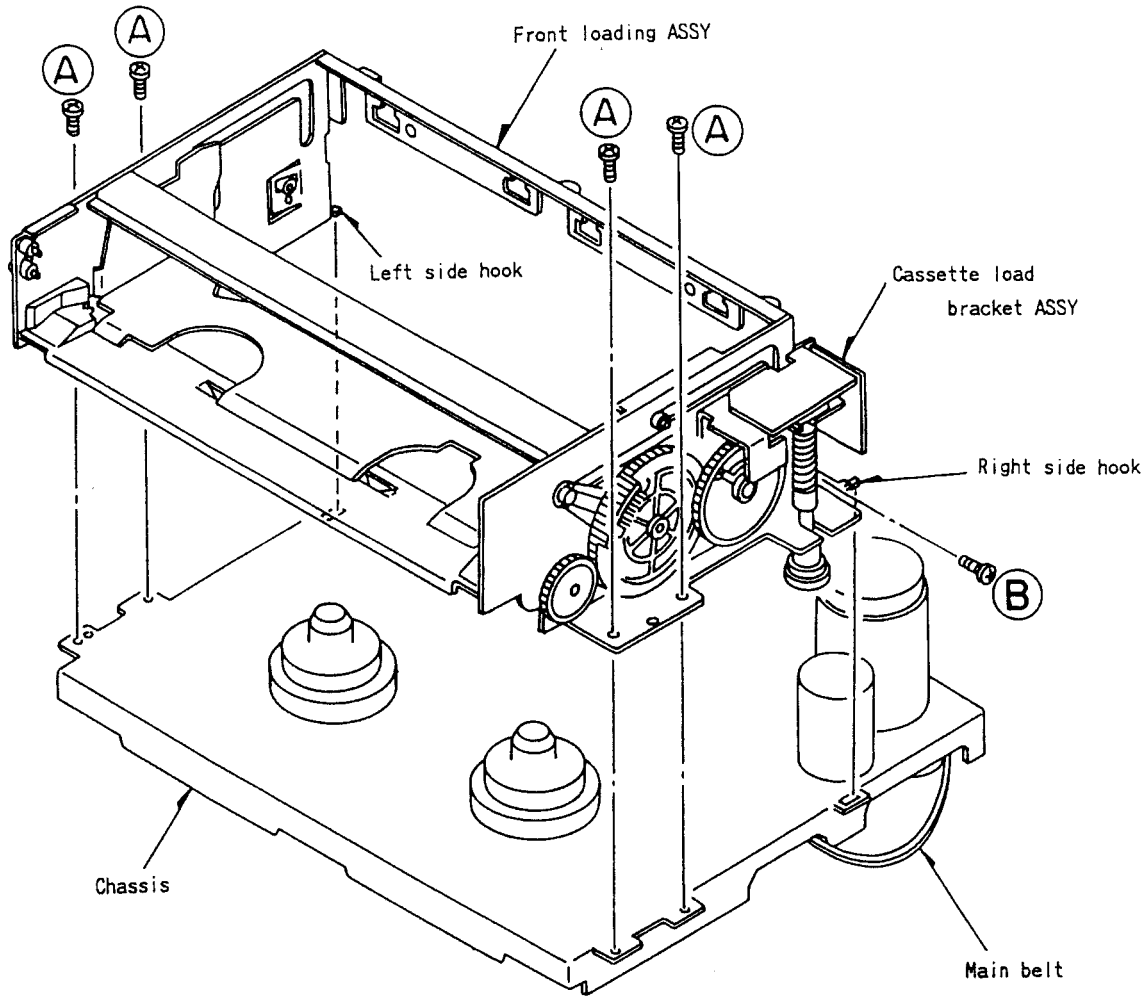


Fig-4

6. "PHOTO SENSOR ASSY" REMOVAL (See Figure-5)

1. "Lamp holder ASSY" Removal

1) Remove 1 screw (A), and take off the "T soft brake ASSY".
(At this time, never take off the "T-spring, soft brake arm".)

2) Release the "Lamp holder ASSY" from hook (a) of the chassis and turn it counterclockwise to remove it from the chassis.

2. "Switch C.B", "Sensor guide" and "End sensor C.B" Removal

1) Remove 1 screw (B) and take off the "Switch C.B".

2) Remove 1 screw (C) and take off the "Sensor guide".

3) Remove 1 screw (D) and take off the "End sensor C.B".

3. "Sensor guide" and "Start sensor C.B" Removal

1) Remove 1 screw (E) and take off the "Sensor guide".

2) Remove 1 screw (F) and take off the "Start sensor C.B".

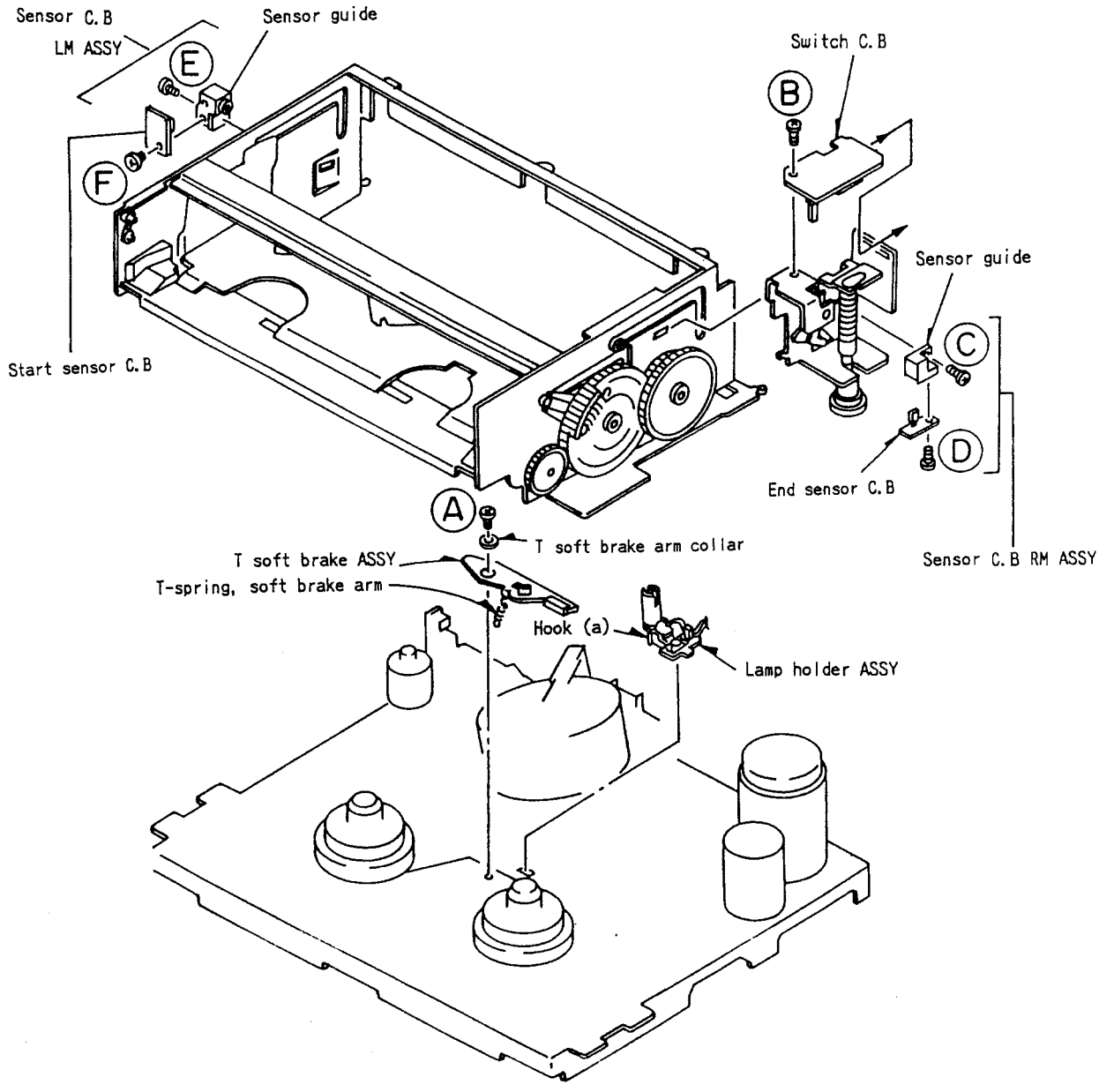


Fig-5

7. "FE PLATE" AND "ACE HEAD" REMOVAL (See Figure-6)

1. "FE plate" Removal

1) Remove Nut (A).

2) Take out the "Impedance roller" and pull up the "FE plate".

(Take care not to lose parts "Impedance roller", "Impedance roller sleeve", "Tape guide frange A", "Tape guide flange spring" and "Plane washer 3×8×0.5" at the time of the "FE plate" removal.)

3) Remove 1 screw (B) and take off the "Full erase head".

2. "ACE head" Removal

1) Remove 3 screws ((C)×1, (D)×1, (E)×1) and "Azimuth spring".

2) Remove "ACE head".

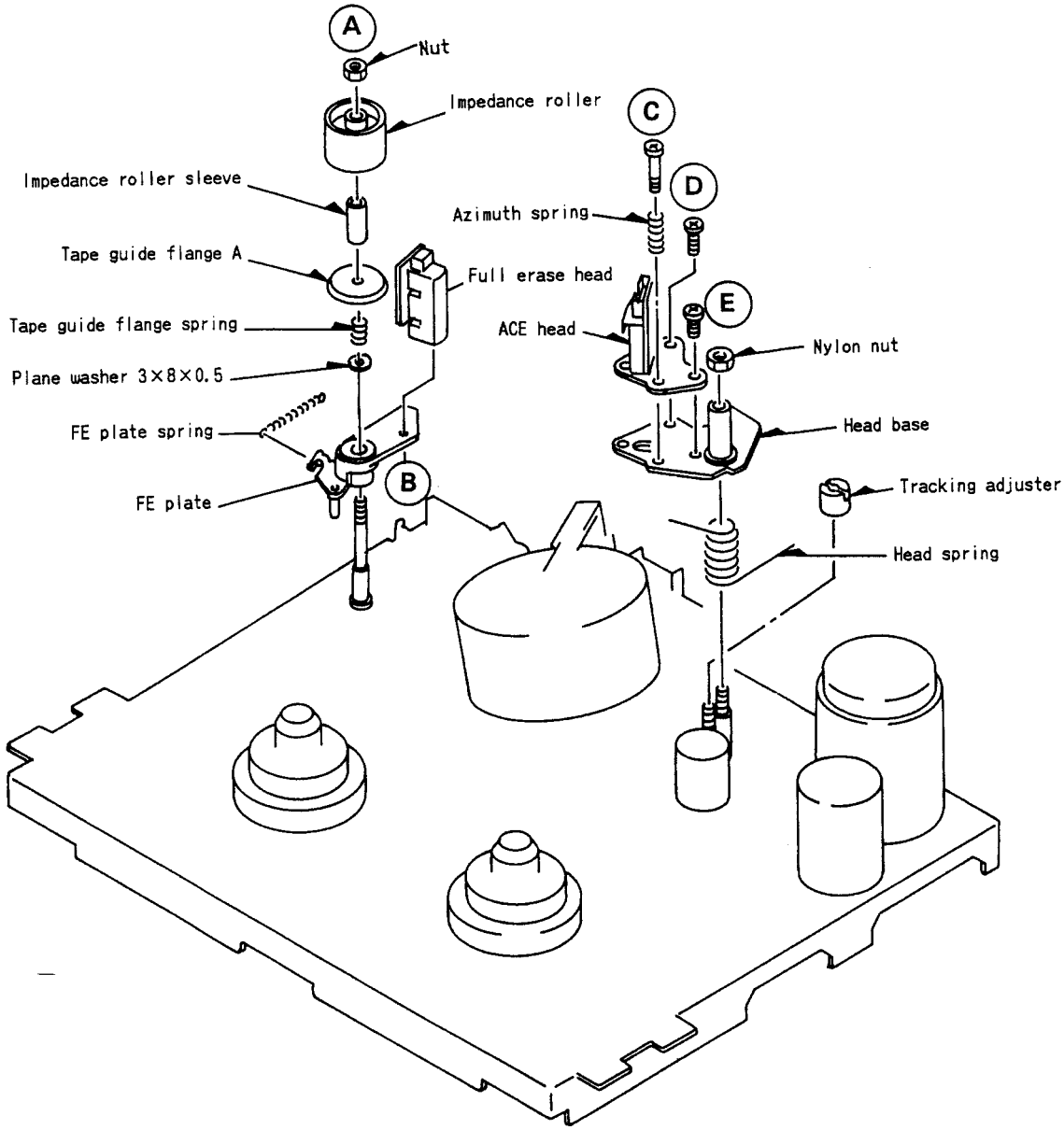


Fig-6

8. "GEAR HOLDER ASSY" REMOVAL (See Figure-7)

1) Remove the "Front loading ASSY".
2) Remove "Drive belt".
3) Remove Poly-Washer and "Middle pulley ASSY".
4) Remove Nylon-Washer (A) and take off the "Clutch ASSY".
5) Remove 1 screw (B) and 2 screws (C) and take off the "Gear holder ASSY".
6) Remove 1 screw (D) and take off the "T-spring, soft brake arm".
7) Take off the "T soft brake ASSY".
8) Remove 2 "E-Rings (E)" and take off the 2 "Reel drive gear".

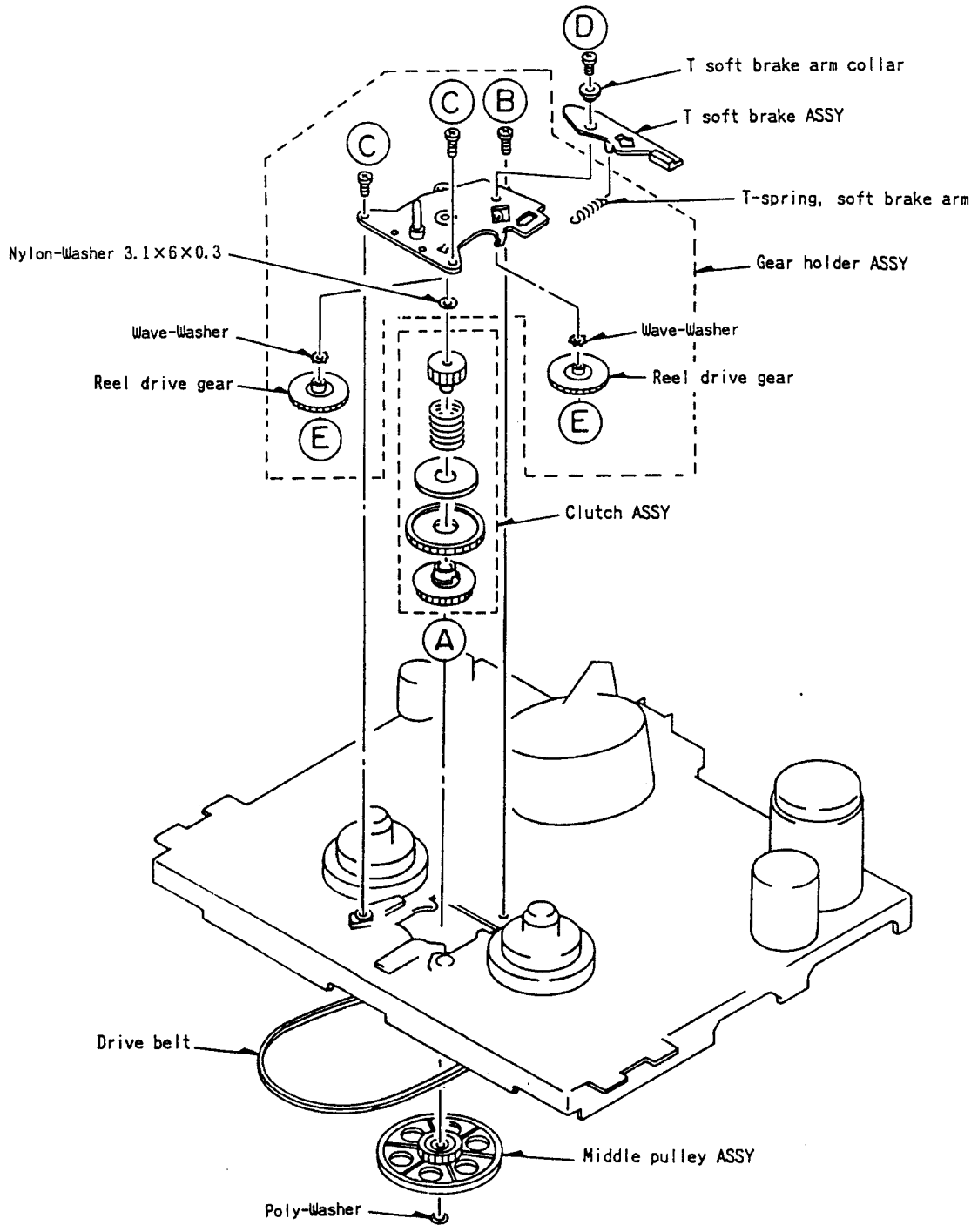


Fig-7

9. "BT BAND ASSY" AND "BT ARM SEMI ASSY" REMOVAL (See Figure-8)

1) Remove the "Front loading ASSY".
2) Remove Poly-Washer (A) and "BT actuate plate spring" from the "BT arm semi ASSY".
3) Remove 1 screw (B) and "Band holder spring".
4) Take off the "BT band ASSY" from the "BT arm semi ASSY".

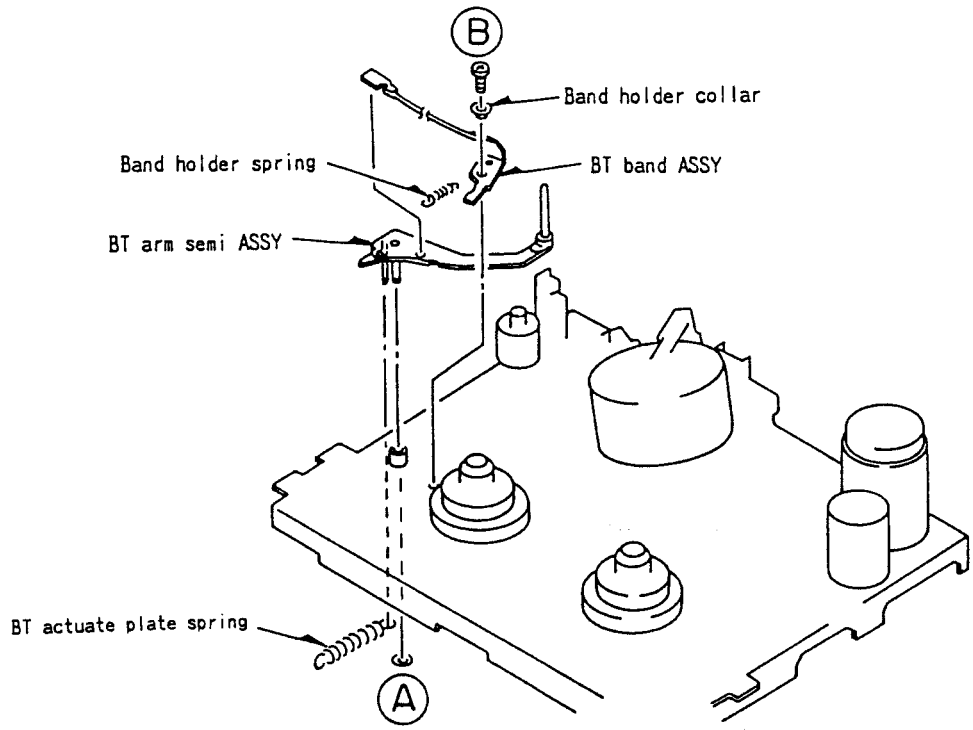


Fig-8

10. "REEL ASSY" REMOVAL (See Figure-9)

1) Remove the "Front loading ASSY", "Gear holder ASSY" and "BT band ASSY".
2) Remove 1 screw (A) and the "Back tension support".
3) Remove the 2 "Reel ASSY".

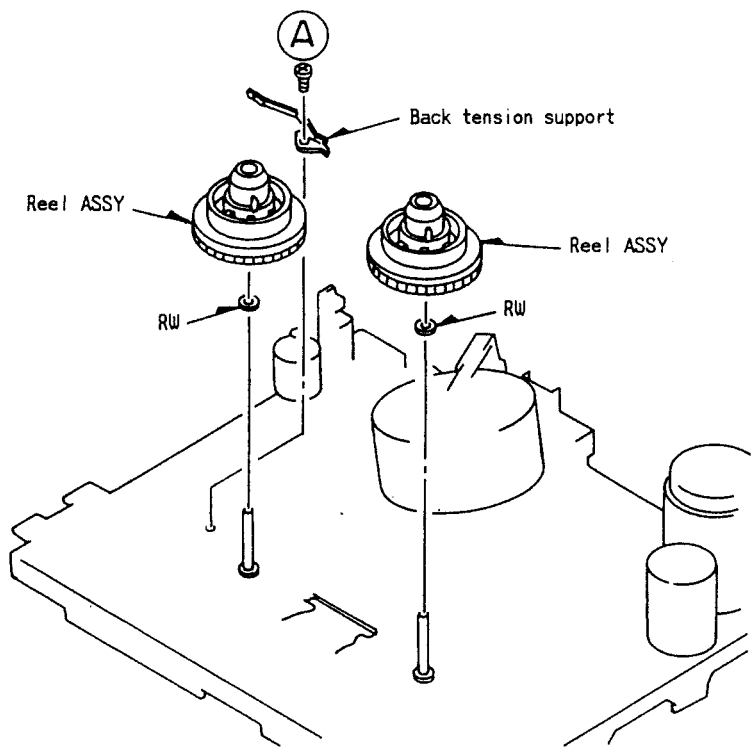


Fig-9

11. "CYLINDER ASSY" REMOVAL (See Figure-10)

1) Remove the "Front loading ASSY".
2) Pull out the "RELAY C.B-5" from the "Cylinder motor TM82".
3) Remove 1 screw (A) and take off the "Drum earth".
4) Remove 3 screws (B) and take off the "Cylinder ASSY".

≡Remarks≡

Take off the "Cylinder ASSY" carefully without any damage.

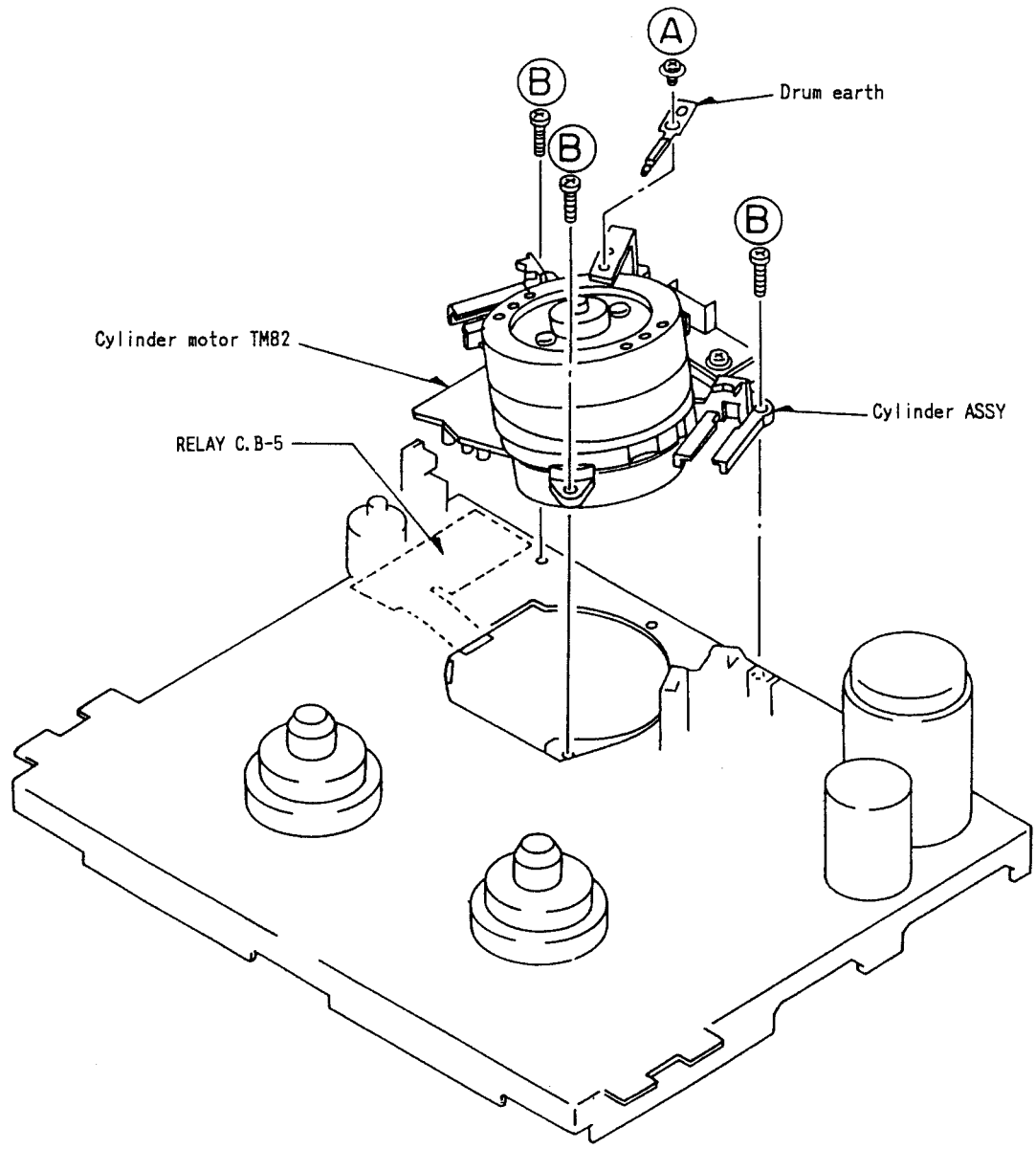


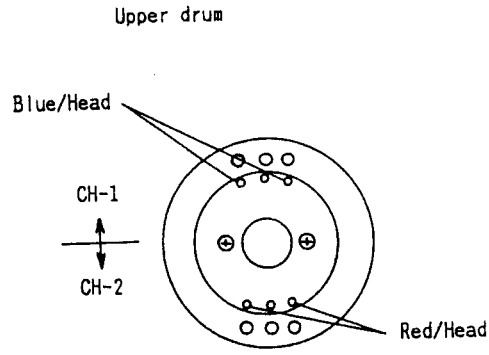
Fig-10

12. "UPPER DRUM" REMOVAL (See Figure-11)

1) Remove the "Front loading ASSY".
2) Remove 1 screw (A) and take off the "Drum earth bracket".
3) Remove 2 screws (B) and take off the "Upper drum".

≡Remark≡

1. Use gloves and do not touch the drum surface with bare fingers.
2. If the Video head is defective, replace the complete "Upper drum" with the Head.



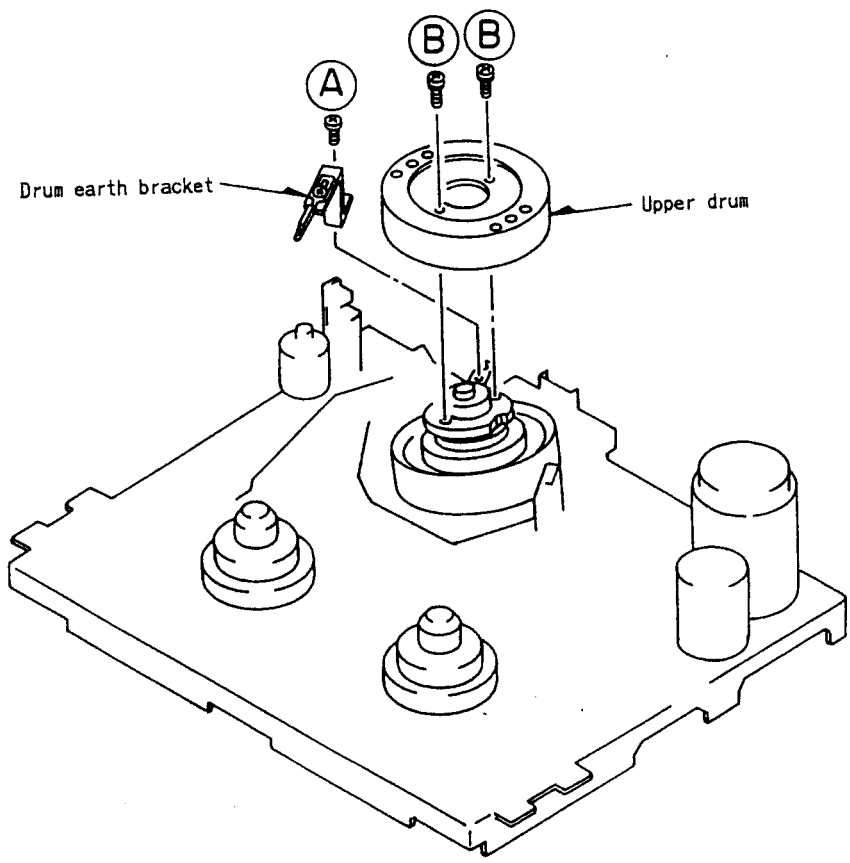


Fig-11

13. "CYLINDER MOTOR" REMOVAL (See Figure-12)

1) Pull out the "RELAY C.B-5" from the "Cylinder motor TM82".
2) Remove 2 screws (A) and take off the "Cylinder motor TM82".
3) Remvoe 3 screws (B) and take off the "Cylinder motor TM82".

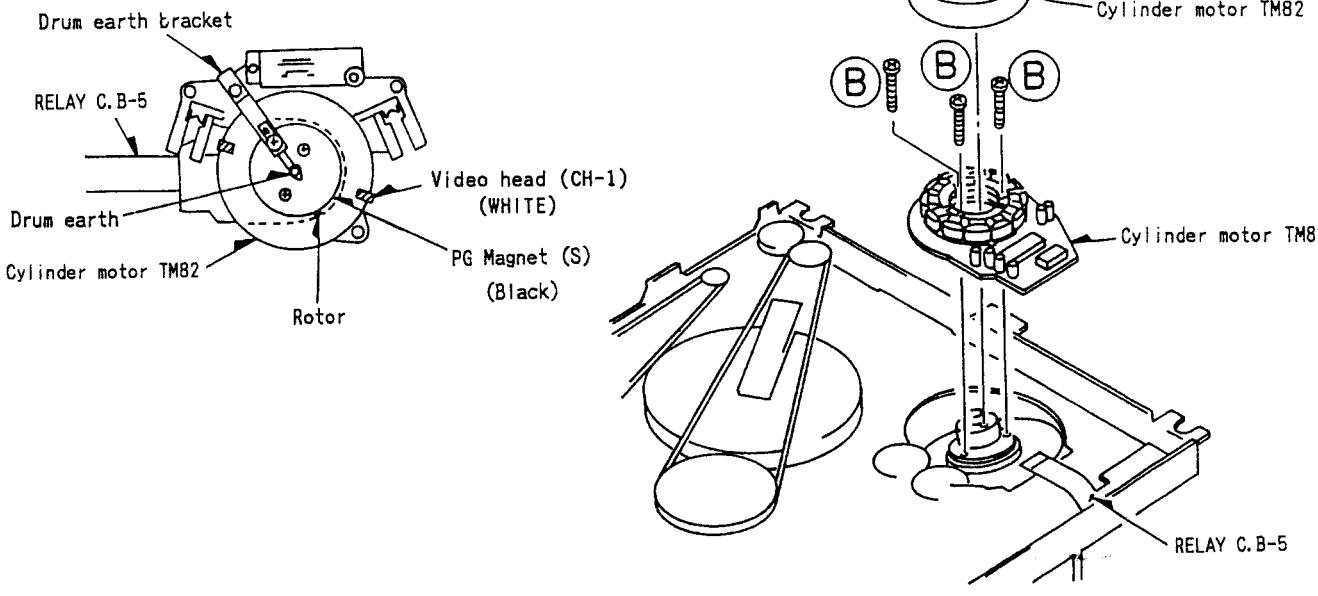


Fig-12

14. "CAPSTAN MOTOR ASSY" AND "LOADING MOTOR ASSY" REMOVAL (See Figure-13)

1. "Capstan Motor ASSY" Removal
   1) Take off the "Drive belt" and "Main belt".
   2) Remove 2 screws (A) and take off the "Capstan motor ASSY".
2. "LOADING MOTOR ASSY" Removal
   1) Take off the "FL belt".
   2) Remove 2 screws (B) and take off the "Loading motor ASSY".

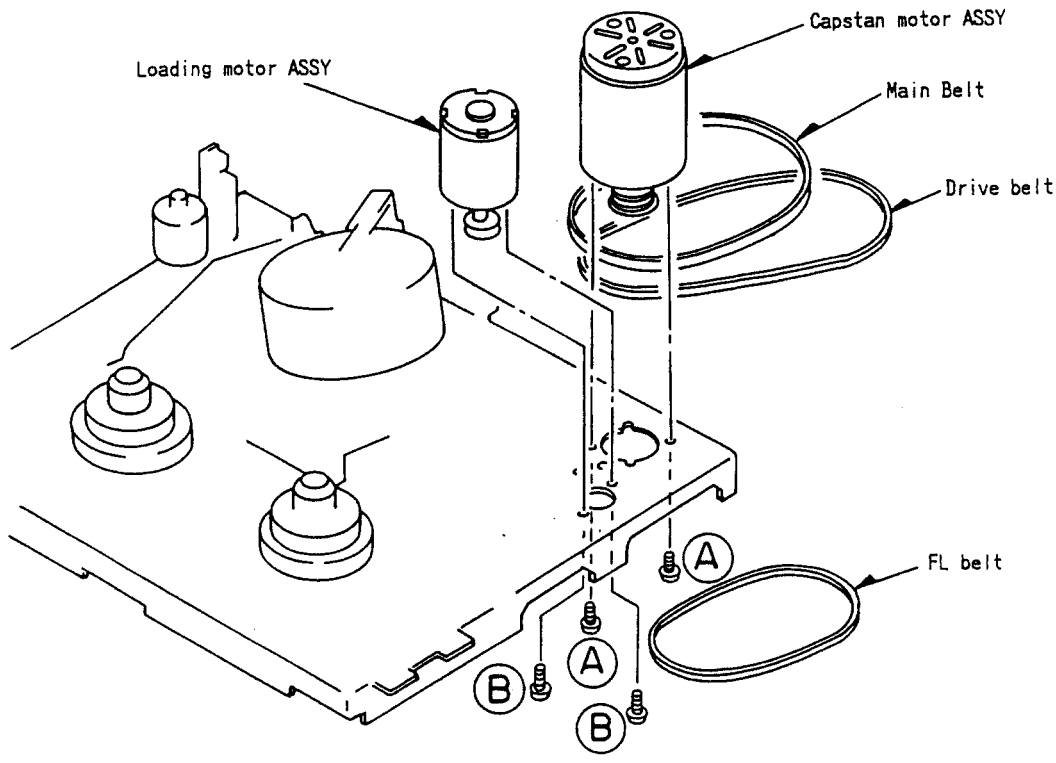


Fig-13

15. "LOADING GEAR" AND "LOADING CAM ASSY" REMOVAL (See Figure-14)

1) Take off the "Loading belt" from the "Loading pulley".
2) Remove Poly-Washer(A)and take off the "Loading pulley".
3) Remove Poly-Washer(B)and take off the "Loading gear".
4) Remove Poly-Washer(C)and take off the "Eject arm" and the "Brake actuate arm".
5) Remvoe 2 screws (D), and take off the "Loading lever reinforce plate" and the "Loading lever ASSY".
6) Take off the "Loading cam ASSY".

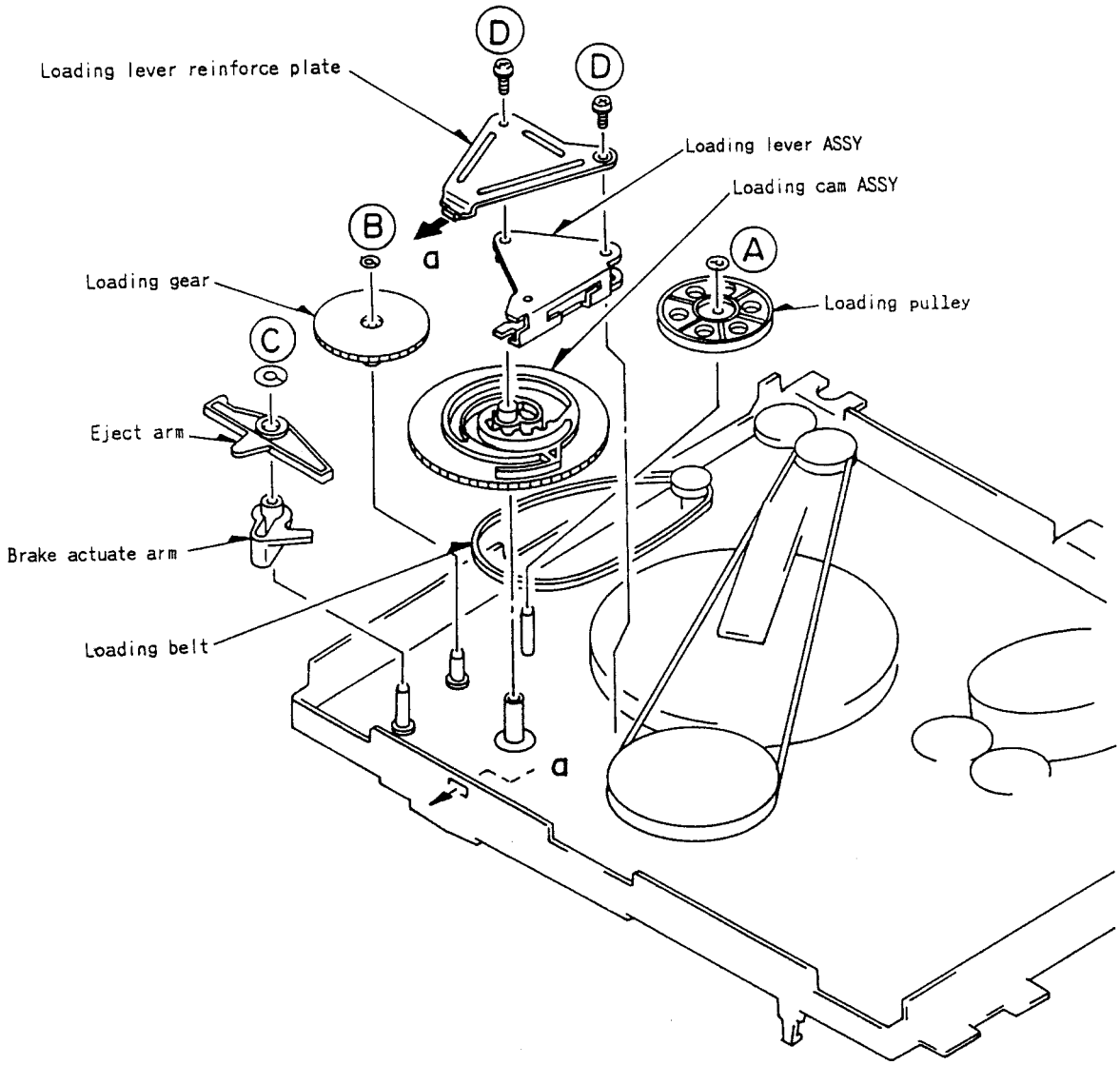


Fig-14

16. "FLYWHEEL CAPSTAN" REMOVAL (See Figure-15)

1) Remove the Nylon-Washer (A).
2) Take off the "Drive belt" and "Main belt".
3) Remove 2 screws (B) and take off the "FL angle ASSY".
4) Take off the "Flywheel capstan".

≡Remark≡

Do not miss the Poly-Washer (C) when pulling out the "Flywheel capstan".

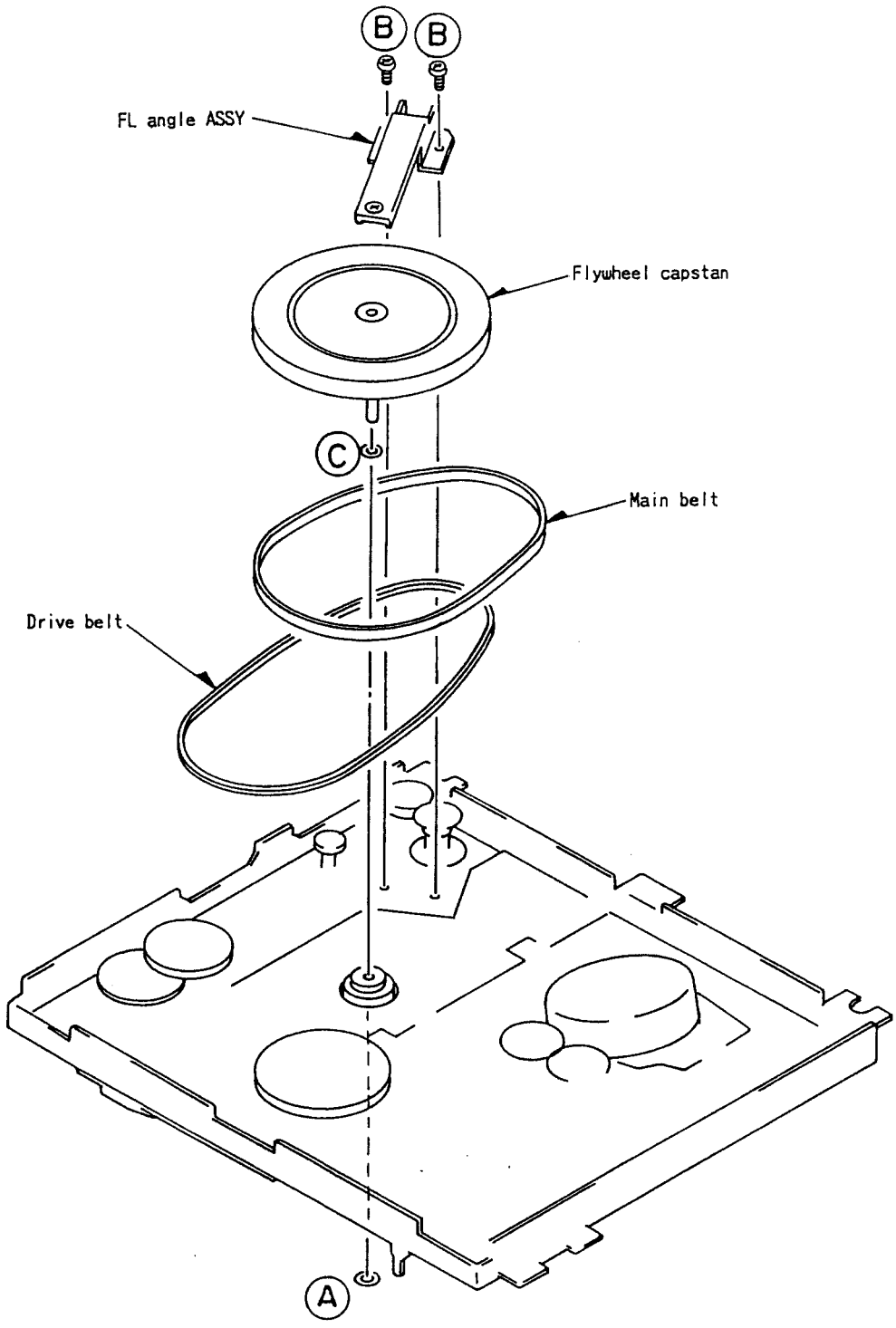


Fig-15

17. "REEL SENSOR" REMOVAL (See Figure-16)

1. Remove "Front loading ASSY" and the "Gear holder ASSY".
2. Remove "Reel ASSY".
3. Remove "Reel sensor".

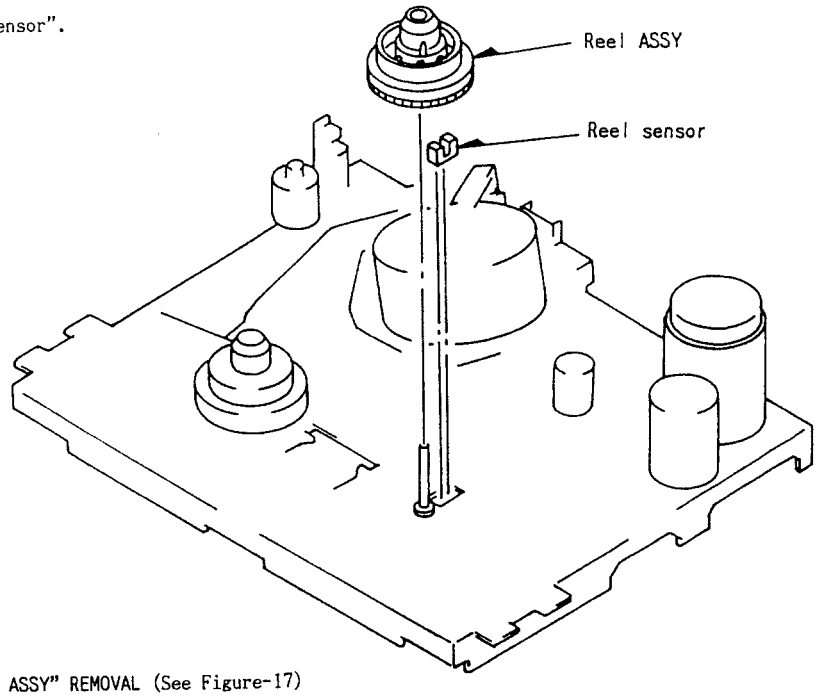


Fig-16

18. "LOADING BASE SEMI ASSY" REMOVAL (See Figure-17)

1) Remove "Cylinder ASSY", "BT arm semi ASSY", "BT band ASSY" and "Front loading ASSY".
2) Remove 1 screw (A) and "L gear plate collar", "L gear plate".
3) Remove 2 screws (B).
4) Take off the "Loading base semi ASSY".

≡Remark≡

When installing the "L gear plate", align markings (C) on the "T loading gear L" and "L gear plate".

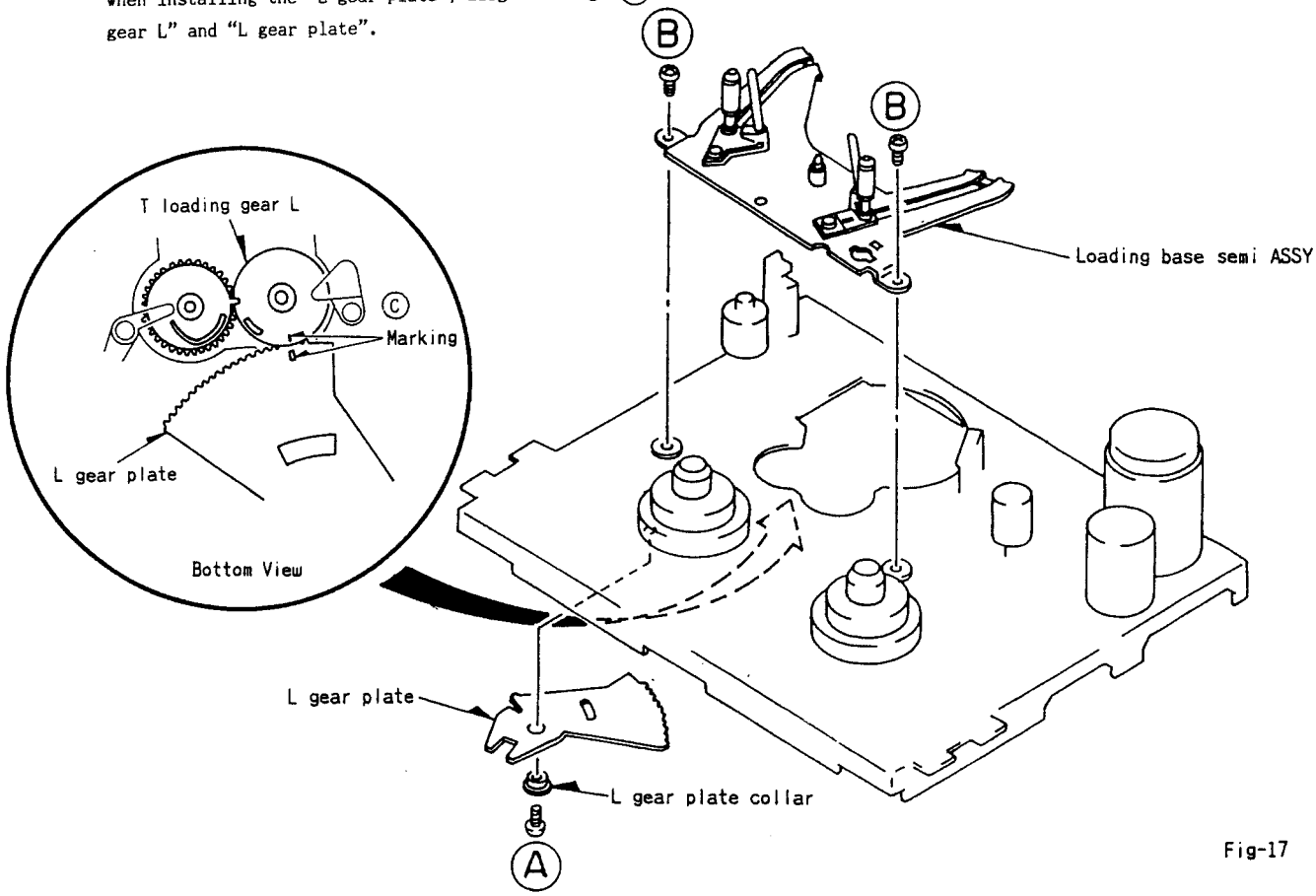


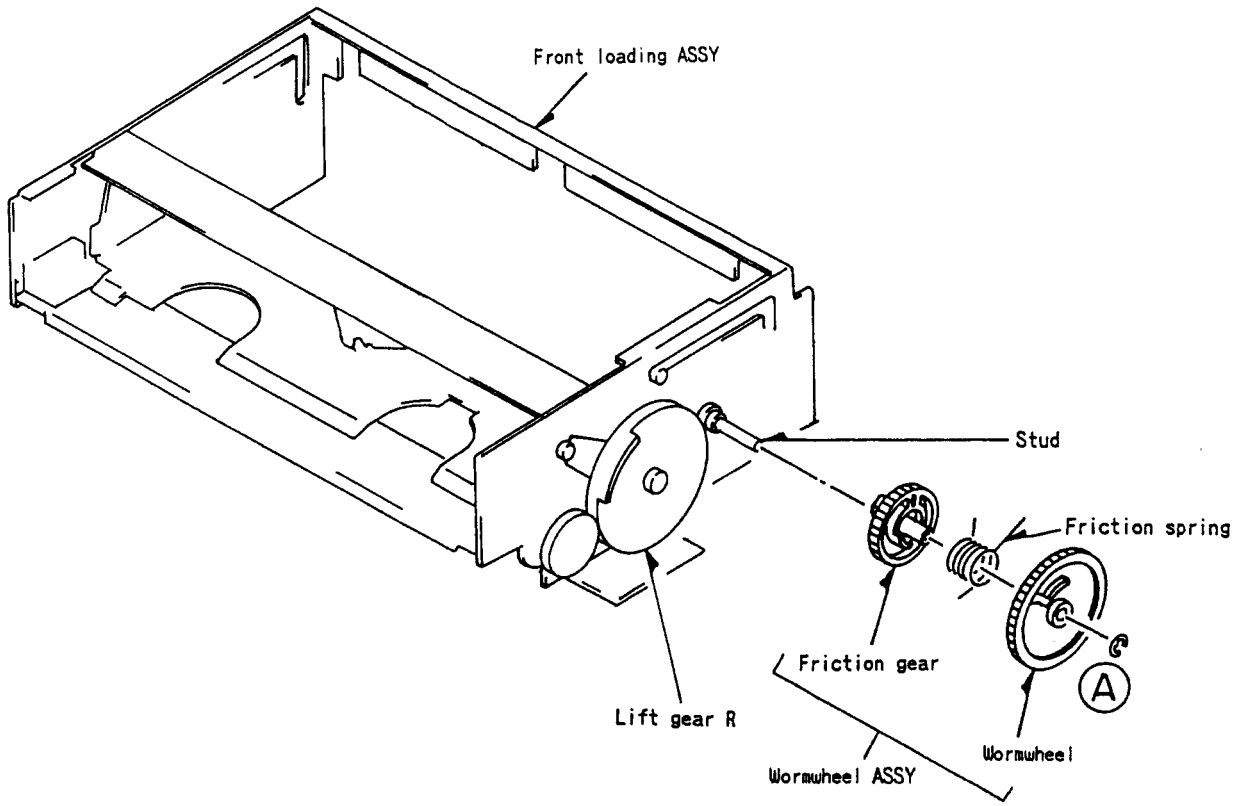
Fig-17

19. "WORMWHEEL ASSY" REMOVAL (See Figure-18)

1. Disassembly
   1) Remove "Front loading ASSY".
   2) Remove E-Ring Ⓐ.
   3) Remove "Wormwheel ASSY". ("Wormwheel", "Friction spring", "Friction gear")
2. Assembly
   1) Turn the "Lift gear R" fully couterclockwise.
   2) Restore "Wormwheel ASSY" to the stud.

≡Remark≡

Match "Lift gear R" to the "Wormwheel hole" as illustrated.



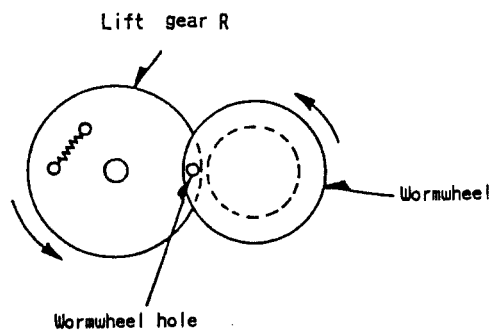


Fig-18

ELECTRICAL MAIN PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
	=== IC ===	
	S0-051-C02-010	IC,AN1431T-TA
	S0-051-C02-030	IC,AN78L05A
	S0-051-C02-040	IC,AN78M05R
	87-001-853-010	IC,BA6209-V3
	87-001-777-010	IC,BA6219B
	87-001-829-010	IC,BA7025L (HV-DK510GPSKSE ONLY)
	87-001-775-010	IC,BA7767AS
	89-JU7-615-010	IC,HD404302A06P (HV-G501PF ONLY)
	87-001-774-010	IC,LA7320
	87-001-773-010	IC,LA7323
	87-001-784-010	IC,LA7331N
	87-020-396-010	IC,LA7910
	87-001-771-010	IC,LC8992
	87-001-855-010	IC,LVA522S
	87-020-096-010	IC,M4066BP
	87-001-180-010	IC,M5223L
	S0-05H-IC1-010	IC,MA2830 F4005
	89-JU5-637-010	IC,MB88525-205M
	89-JU7-614-010	IC,MN67481P
	89-JU5-649-010	IC,MSM16811
	87-001-858-010	IC,PQ09R05
	87-020-923-010	IC,PST523D
	87-001-790-010	IC,SBX1610-52 UNIT(REMOTE SENSOR)
	87-027-564-010	IC,TC4011BP
	87-027-327-010	IC,UPC574J
	89-JU5-650-010	IC,UPD1730CT
	89-JU5-625-010	IC,UPD75208CW-A25
	=== TRANSISTOR ===	
	87-026-452-010	TRANSISTOR,2SA933S
	87-026-463-010	TRANSISTOR,2SA933SR
	89-110-484-010	TRANSISTOR,2SA1048Y
	89-207-333-010	TRANSISTOR,2SB733K3
	87-026-462-010	TRANSISTOR,2SC1740SR
	89-320-026-010	TRANSISTOR,2SC2002
	89-339-406-010	TRANSISTOR,2SC3940A
	S0-05Q-003-010	TRANSISTOR,2SC4148
	87-026-219-010	TRANSISTOR,DTA144ES
	87-026-218-010	TRANSISTOR,DTC144ES
	S0-05Q-002-020	TRANSISTOR,UN4211
	=== DIODE ===	
	87-020-465-010	DIODE,1SS133
	87-020-752-010	DIODE,1SS270A-TD
	S0-05D-002-030	DIODE,D1NL-20-4070
	S0-05D-001-010	DIODE,S1WBA60
	S0-05D-002-010	DIODE,S3LA20-04P16
	87-020-511-010	DIODE,ZENER 05Z4.7Y (HV-DK510GPSKSE ONLY)
	87-027-584-010	DIODE,ZENER HZ9C1L
	87-027-171-010	DIODE,ZENER RD2.7ESB2
	S0-05D-002-050	DIODE,ZENER RD24F-B2-T7
	S0-05D-003-040	DIODE,ZENER RD47EB
	S0-05D-001-030	DIODE,ZENER RD6.2F-B2-T7
	SU-S10-40M-000	DIODE,US1040M
	=== MAIN CIRCUIT BOARD SECTION ===	
C401	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C402	★87-010-263-010	CAP,ELECT 100-10
C403	★87-010-405-010	CAP,ELECT 10-50 SME
C404	★87-010-405-010	CAP,ELECT 10-50 SME
C405	★87-010-405-010	CAP,ELECT 10-50 SME
C411	★87-010-263-010	CAP,ELECT 100-10
C412	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C413	★87-010-405-010	CAP,ELECT 10-50 SME
C416	★87-010-615-010	CAP,ELECT 2.2-50BP
C417	★87-010-400-010	CAP,ELECT 0.47-50 SME
C418	★87-018-106-010	CAP,CERA-SOL SS 15P-50 SL
C420	★87-018-126-010	CAP,CERA-SOL SS 390P-50 B
C421	★87-018-143-010	CAP,CERA-SOL SS 4.7P-50 CH
C422	★87-010-263-010	CAP,ELECT 100-10
C423	★87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C424	★87-010-401-010	CAP,ELECT 1-50 SME
C425	★87-010-404-010	CAP,ELECT 4.7-50 SME
C426	★87-010-546-010	CAP,ELECT 0.33-50 SME
C427	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C428	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C429	★87-018-110-010	CAP,CERA-SOL SS 24P-50 SL
C430	★87-018-118-010	CAP,CERA-SOL SS 82P-50 B
C431	★87-018-110-010	CAP,CERA-SOL SS 24P-50 SL
C432	★87-010-402-010	CAP,ELECT 2.2-50 SME
C434	★87-018-120-010	CAP,CERA-SOL SS 120P-50 B
C435	★87-018-104-010	CAP,CERA-SOL SS 10P-50 SL
C436	★87-018-116-010	CAP,CERA-SOL SS 56P-50 SL
C437	★87-018-131-010	CAP,CERA-SOL SS 1000P-50 B
C438	★87-018-133-010	CAP,CERA-SOL SS 4700P-16 X
C439	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C440	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C441	★87-010-402-010	CAP,ELECT 2.2-50 SME
C442	★87-010-405-010	CAP,ELECT 10-50 SME
C443	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C444	★87-010-403-010	CAP,ELECT 3.3-50 SME
C445	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C447	★87-018-126-010	CAP,CERA-SOL SS 390P-50 B (HV-DK510GPSKSE ONLY)
C449	★87-018-117-010	CAP,CERA-SOL SS 68P-50 SL
C450	★87-018-121-010	CAP,CERA-SOL SS 150P-50 B
C451	★87-010-260-010	CAP,ELECT 47-25 SME
C452	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C453	★87-018-121-010	CAP,CERA-SOL SS 150P-50 B
C461	★87-010-263-010	CAP,ELECT 100-10
C462	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C463	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C464	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C465	★87-018-119-010	CAP,CERA-SOL SS 100P-50 B
C466	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C467	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C468	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C469	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C470	★87-018-119-010	CAP,CERA-SOL SS 100P-50 B
C471	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C472	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C473	★87-010-401-010	CAP,ELECT 1-50 SME
C474	★87-010-401-010	CAP,ELECT 1-50 SME
C475	★87-010-401-010	CAP,ELECT 1-50 SME
C476	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C477	★87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C479	★87-010-263-010	CAP,ELECT 100-10
C480	★87-010-401-010	CAP,ELECT 1-50 SME
C481	★87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C484	★87-018-112-010	CAP,CERA-SOL SS 30P-50 SL
C485	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C486	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C487	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y

REF.NO.	PART NO.	DESCRIPTION
C511	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y (HV-DK510GPSKSE ONLY)
C512	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y (HV-DK510GPSKSE ONLY)
C514	*87-010-263-010	CAP,ELECT 100-10 (HV-DK510GPSKSE ONLY)
C515	*87-010-265-010	CAP,ELECT 33-16V (HV-DK510GPSKSE ONLY)
C516	*87-010-263-010	CAP,ELECT 100-10 (HV-DK510GPSKSE ONLY)
C520	*87-018-114-010	CAP,CERA-SOL SS 39P-50 SL
C551	*87-010-371-010	CAP,ELECT 470-6.3
C552	*87-010-405-010	CAP,ELECT 10-50 SME
C581	*87-010-405-010	CAP,ELECT 10-50 SME
C582	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C583	*87-010-263-010	CAP,ELECT 100-10
C584	*87-010-405-010	CAP,ELECT 10-50 SME
C585	*87-010-405-010	CAP,ELECT 10-50 SME
C586	*87-018-125-010	CAP,CERA-SOL SS 330P-50 B
C587	*87-018-125-010	CAP,CERA-SOL SS 330P-50 B
C801	*87-010-404-010	CAP,ELECT 4.7-50 SME
C803	*87-010-404-010	CAP,ELECT 4.7-50 SME
C804	*87-010-405-010	CAP,ELECT 10-50 SME
C805	*87-010-404-010	CAP,ELECT 4.7-50 SME
C806	*87-010-402-010	CAP,ELECT 2.2-50 SME
C807	*87-010-381-010	CAP,ELECT 330-16 SME
C808	*87-010-265-010	CAP,ELECT 33-16 SME
C812	*87-018-127-010	CAP,CERA-SOL SS 470P-50 B
C813	*87-010-408-010	CAP,ELECT 47-50
C814	*87-010-791-010	CAP,ELECT 33-63 SME
C815	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C816	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C817	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C818	*87-018-196-010	CAP,CERA-SOL SS 1500P-16X
C819	*87-010-545-010	CAP,ELECT 0.22-50 SME
C820	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C821	*87-010-384-010	CAP,ELECT 100-25 SME
C822	*87-010-402-010	CAP,ELECT 2.2-50 SME
C838	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C840	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C841	*87-010-384-010	CAP,ELECT 100-25 SME
C842	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C843	*87-010-260-010	CAP,ELECT 47-25 SME
C844	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C845	*87-010-405-010	CAP,ELECT 10-50 SME
C852	*87-018-115-010	CAP,CERA-SOL SS 47P-50SL
C881	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C882	*87-010-384-010	CAP,ELECT 100-25 SME
C883	*87-010-381-010	CAP,ELECT 330-16 SME
C884	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C885	*87-010-405-010	CAP,ELECT 10-50 SME
C889	*87-010-260-010	CAP,ELECT 47-25 SME
C890	*87-010-403-010	CAP,ELECT 3.3-50 SME
C891	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C892	*87-010-384-010	CAP,ELECT 100-25 SME
DL461	*89-JU8-619-010	DL,EFD-JF124A13F
FIL411	*89-JU5-667-010	FILTER,LPF 3M 7YCP
FIL461	*89-JU7-644-010	FILTER,LPF 1M
FIL462	*89-JU5-666-010	FILTER,AC-7 4.43M
FIL463	*87-008-416-010	FILTER,SFS 5.06ME
FIL511	*89-JU5-663-010	FILTER,SFE4.5MB (HV-DK510GPSKSE ONLY)
J401	89-JU7-646-010	JACK PIN 2-2(AUDIO/VIDEO IN)
J402	89-JU7-646-010	JACK PIN 2-2(AUDIO/VIDEO OUT)

REF.NO.	PART NO.	DESCRIPTION
L401	*87-005-208-010	COIL,100UH
L402	*87-005-208-010	COIL,100UH
L411	*87-005-208-010	COIL,100UH
L412	*87-005-208-010	COIL,100UH
L413	*87-003-281-010	COIL,3.9UH LAL02 (HV-DK510GPSKSE ONLY)
L415	*87-003-288-010	COIL,180UH LAL02
L416	*87-003-150-010	COIL,68UH LAL02
L417	*87-003-150-010	COIL,68UH LAL02
L461	*87-005-208-010	COIL,100UH
L462	*87-005-400-010	COIL,18UH J
L463	*87-003-142-010	COIL,3.3UH LAL02
L464	*87-003-284-010	COIL,27UH LAL02
L511	*82-132-631-010	COIL,4.7MMH,J (HV-DK510GPSKSE ONLY)
L801	*87-005-208-010	COIL,100UH
L809	*87-005-208-010	COIL,100UH
L810	*87-005-208-010	COIL,100UH
L811	*87-005-208-010	COIL,100UH
L812	*87-005-204-010	COIL,47UH
L814	*87-005-208-010	COIL,100UH
RF801	89-JU5-646-010	RF MOD,E7552T (HV-G501PF ONLY)
RF801	89-JU5-672-010	RF MOD,E7553TG (HV-DK510GPSKSE ONLY)
SFR411	*87-024-172-010	SFR,10K
SFR412	*87-024-172-010	SFR,10K
SFR413	*87-024-172-010	SFR,10K
SFR414	*87-024-168-010	SFR,1K
SFR415	*87-024-168-010	SFR,1K
SFR416	*87-024-170-010	SFR,3.3K
SFR461	*87-024-168-010	SFR,1K
SFR801	*87-024-170-010	SFR,3.3K
TU801	89-JU5-674-010	TV TU,4EC-721 (HV-G501PF ONLY)
TU801	89-JU5-653-010	TV TU,F4EH-721 (HV-DK510GPSKSE ONLY)
VIF801	*89-JU5-675-010	VIF PACK,VNA101S (HV-G501PF ONLY)
VIF801	89-JU5-673-010	VIF PACK,VNA102M (HV-DK510GPSKSE ONLY)
X461	*89-JU7-641-010	XTAL RESONATOR 4.43M
X801	*87-030-188-010	CERAMIC RESONATOR 4.5MGW

=== SERVO/SYSCON CIRCUIT BOARD SECTION ===

C201	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C202	*87-010-263-010	CAP,ELECT 100-10
C204	*87-010-401-010	CAP,ELECT 1-50 SME
C205	*87-010-374-010	CAP,ELECT 47-10
C206	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C207	*87-010-405-010	CAP,ELECT 10-50 SME
C208	*87-010-615-010	CAP,ELECT 2.2-50 BP
C209	*87-010-405-010	CAP,ELECT 10-50 SME
C210	*87-010-405-010	CAP,ELECT 10-50 SME
C211	*87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C212	*87-010-401-010	CAP,ELECT 1-50 SME
C213	*87-010-401-010	CAP,ELECT 1-50 SME
C214	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C215	*87-010-401-010	CAP,ELECT 1-50 SME
C216	*87-010-401-010	CAP,ELECT 1-50 SME
C217	*87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C218	*87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C219	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C220	*87-010-263-010	CAP,ELECT 100-10

REF.NO.	PART NO.	DESCRIPTION
C221	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C222	★87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C223	★87-010-265-010	CAP,ELECT 33-16 SME
C224	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C225	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C226	★87-010-545-010	CAP,ELECT 0.22-50 SME
C227	★87-010-263-010	CAP,ELECT 100-10
C228	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C229	★87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C230	★87-018-209-010	CAP,CERA-SOL SS 0.1-50 F
C231	★87-018-209-010	CAP,CERA-SOL SS 0.1-50 F
C232	★87-018-209-010	CAP,CERA-SOL SS 0.1-50 F
C233	★87-010-384-010	CAP,ELECT 100-25 SME
C234	★87-018-209-010	CAP,CERA-SOL SS 0.1-50 F
C235	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C236	★87-010-263-010	CAP,ELECT 100-10
C237	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C238	★87-010-263-010	CAP,ELECT 100-10 (HV-G50IPF ONLY)
C239	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y (HV-G50IPF ONLY)
C241	★87-010-405-010	CAP,ELECT 10-50 SME (HV-G50IPF ONLY)
C243	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C244	★87-018-209-010	CAP,CERA-SOL SS 0.1-50 F
C245	★87-010-384-010	CAP,ELECT 100-25 SME
C246	★87-010-544-010	CAP,ELECT 0.1-50 (HV-G50IPF ONLY)
C247	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C248	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
L201	★87-005-204-010	COIL,47UH
L202	★87-005-204-010	COIL,47UH (HV-50IPF ONLY)
L203	★87-006-189-010	COIL,220UH EL0909
L204	★87-006-189-010	COIL,220UH EL0909
⚠R254	87-029-082-010	RES,FUSE 100-1/4W
⚠R266	★87-029-361-010	RES,FUSE 3.3-1/2W
⚠R282	★87-029-361-010	RES,FUSE 3.3-1/2W
SFR201	87-024-277-010	SFR,220K
SFR202	87-024-277-010	SFR,220K
X201	★87-030-185-010	CERAMIC RESONATOR KBR6.0MES
X202	★87-030-179-010	CERAMIC RESONATOR KBR-4.0MES (HV-G50IPF ONLY)
⚌ PRE AMP/AUDIO CIRCUIT BOARD SECTION ⚌		
C601	★87-010-248-010	CAP,ELECT 220-10 SME
C602	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C603	★87-010-260-010	CAP,ELECT 47-25 SME
C604	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C606	★87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C610	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C611	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C612	★87-015-695-010	CAP,ELECT 1-50
C613	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C614	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C615	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C616	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C617	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C618	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C630	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C631	★87-018-115-010	CAP,CERA-SOL SS 47P-50 SL
C632	★87-018-120-010	CAP,CERA-SOL SS 120P-50 B
C633	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C634	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C636	★87-018-120-010	CAP,CERA-SOL SS 120P-50 B
C637	★87-018-125-010	CAP,CERA-SOL SS 330P-50 B
C702	★87-018-123-010	CAP,CERA-SOL SS 220P-50 B
C703	★87-015-684-010	CAP,ELECT 47-16
C704	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C705	★87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C706	★87-015-687-010	CAP,ELECT 33-25
C707	★87-010-384-010	CAP,ELECT 100-25 SME
C708	★87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C709	★87-010-403-010	CAP,ELECT 3.3-50 SME
C710	★87-010-404-010	CAP,ELECT 4.7-50 SME
C712	★87-010-402-010	CAP,ELECT 2.2-50 SME
C717	★87-018-197-010	CAP,CERA-SOL SS 1800P-16 X
C718	★87-010-404-010	CAP,ELECT 4.7-50 SME
C719	★87-018-119-010	CAP,CERA-SOL SS 100P-50 B
C720	★87-010-382-010	CAP,ELECT 22-25 SME
C722	★87-015-695-010	CAP,ELECT 1-50
C723	★87-018-133-010	CAP,CERA-SOL SS 4700P-16 X
C724	★87-018-131-010	CAP,CERA-SOL SS 1000P-50 B
C725	★87-015-676-010	CAP,ELECT 47-6.3
C726	★87-015-695-010	CAP,ELECT 1-50
C727	★87-018-209-010	CAP,CREA-SOL SS 0.1-50 F
C732	★87-018-209-010	CAP,CREA-SOL SS 0.1-50 F
C734	★87-018-133-010	CAP,CERA-SOL SS 4700P-16 X
L601	★87-005-196-010	COIL,10UH
L602	★87-005-208-010	COIL,100UH
L630	★87-003-149-010	COIL,47UH
L631	★87-003-403-010	COIL,5.6UH LAL02
L633	★87-003-146-010	COIL,15UH LAL02
L634	★87-003-288-010	COIL,180UH LAL02
L701	★89-JU8-609-010	COIL,18MMH
L702	★87-003-152-010	COIL,100UH
SFR701	87-024-275-010	SFR,47K
T701	★89-JU8-610-010	COIL,OSC BIAS-70K
⚌ TIMER CIRCUIT BOARD SECTION ⚌		
C901	★87-015-682-010	CAP,ELECT 22-16
C902	★87-015-682-010	CAP,ELECT 22-16
C903	★87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C904	★87-015-682-010	CAP,ELECT 22-16
C905	★87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C907	★87-015-687-010	CAP,ELECT 33-25
C909	★87-018-148-010	CAP,CERA-SOL SS 12P-50 CH
D939	87-001-824-010	LED LT3S47B(AUTO TRACKING) (HV-G50IPF ONLY)
FL901	89-JU5-621-010	FL,9-LT-20GK(DISPLAY)
J901	★87-009-206-010	PIN JACK(AUDIO/VIDEO IN)
L901	★87-003-152-010	COIL,100UH
L902	★87-003-152-010	COIL,100UH
RV901	87-024-225-010	VR,250KB(TRACKING)
RV902	87-024-224-010	VR,10KB(PICTURE)
SW902	87-036-186-010	TACT SW(EJECT)
SW903	87-036-186-010	TACT SW(STOP)
SW904	87-036-186-010	TACT SW(PLAY)
SW905	87-036-186-010	TACT SW(REW)
SW906	87-036-186-010	TACT SW(F.FWD)
SW907	87-036-186-010	TACT SW(NOISE CANCEL,PAUSE/STILL)
SW908	87-036-186-010	TACT SW(RECORD)
SW909	87-036-186-010	TACT SW(QTR)
SW910	87-036-186-010	TACT SW(TIMER REC)
SW911	87-036-186-010	TACT SW(COUNTER RESET)
SW912	87-036-186-010	TACT SW(COUNTER MEMORY)
SW914	87-036-186-010	TACT SW(CLOCK/COUNTER)
SW915	87-036-186-010	TACT SW(CHECK/PRGM)

REF.NO.	PART NO.	DESCRIPTION
SW916	87-036-186-010	TACT SW(NEXT)
SW917	87-036-186-010	TACT SW(CLEAR)
SW918	87-036-186-010	TACT SW(TIME SET)
SW919	87-036-186-010	TACT SW(CHANNEL UP)
SW920	87-036-186-010	TACT SW(CHANNEL DOWN)
SW921	87-036-186-010	TACT SW(RESET)
SW922	87-036-186-010	TACT SW(CH-10)
SW923	87-036-186-010	TACT SW(CH-1)
SW924	87-036-186-010	TACT SW(TUNING +)
SW925	87-036-186-010	TACT SW(TUNING -)
SW926	87-036-186-010	TACT SW(INPUT SELECT)
SW929	87-036-186-010	TACT SW(BAND)
SW930	87-036-178-010	SLIDE SW (AUTO TRACKING) (HV-G50IPF ONLY)
SW931	87-036-186-010	TACT SW(TEST)
X901	★87-030-184-010	CERAMIC RESONATOR KBR4.19MES
X902	★87-030-194-010	XTAL RESONATOR 32.768K5PPM
=== POWER SW CIRCUIT BOARD SECTION ===		
D938	87-001-123-010	LED SLZ-981C-02(POWER)
SW901	87-036-186-010	TACT SW(POWER)
X903	★87-030-189-010	PIEZO RESONATOR PKM22EPP
=== RELAY CIRCUIT BOARD-1 SECTION ===		
=== RELAY CIRCUIT BOARD-2 SECTION ===		
=== RELAY CIRCUIT BOARD-3 SECTION ===		
=== RELAY CIRCUIT BOARD-4 SECTION ===		
=== BASE CIRCUIT BOARD SECTION ===		
PCB-K	★S8-059-133-020	BASE PCB ASSY(W/MODE SW)
CP1	S6-808-080-030	PHOTO(REEL) SENSOR ON1385
=== RELAY CIRCUIT BOARD-5 SECTION ===		
PCB-L	★S8-059-013-470	RELAY PCB-5 ASSY
=== RELAY CIRCUIT BOARD-6 SECTION ===		
PCB-M	★S8-059-013-050	RELAY PCB-6 ASSY
=== SWITCH CIRCUIT BOARD SECTION ===		
PCB-N	★S8-059-163-200	SWITCH PCB ASSY(W/SW1,2,3)
=== START CIRCUIT BOARD SECTION ===		
PCB-O	★S8-059-163-010	SENSOR PCB RM ASSY
=== END SENSOR CIRCUIT BOARD SECTION ===		
PCB-P	★S8-059-163-010	SENSOR PCB LM ASSY
=== LED CIRCUIT BOARD SECTION ===		
LED1	★S8-059-133-030	LED ASSY(W/PCB-Q)
=== ACE HEAD CIRCUIT BOARD SECTION ===		
ACEH	S6-204-150-080	ACE HEAD HV224206(W/PCB-R)
=== ERASE CIRCUIT BOARD SECTION ===		

REF.NO.	PART NO.	DESCRIPTION
FEH	S6-204-150-030	FULL ERASE HEAD(W/PCB-S)
=== POWER CIRCUIT BOARD-1 SECTION ===		
⚠C101	S0-05C-001-010	CAP,FILM 0.22-250V
⚠F101	S0-05F-001-010	FUSE,1.6A 250V
L101	★S0-05L-001-010	COIL,18MMH 0.5A
⚠J101	S0-051-NLE-T00	AC JACK(AC)
=== POWER CIRCUIT BOARD-2 SECTION ===		
C102	★S0-5EC-010-210	CAP,CERA 4700P-250V
C104	★S0-05C-001-040	CAP,ELECT 82-400V
C105	★S0-05C-001-050	CAP,FILM 0.047-630V
C106	★S0-05C-001-060	CAP,CERA 100P-1KV
C107	★S0-05C-001-070	CAP,ELECT 1-400V
C202	★87-010-053-010	CAP,ELECT 1-50V
C203	★S0-05C-002-030	CAP,ELECT 680-25V
C204	★87-010-050-010	CAP,ELECT 470-25V
C205	★S0-05C-002-030	CAP,ELECT 680-25V
C206	★S0-05C-002-060	CAP,ELECT 100-10V
C207	★87-010-050-010	CAP,ELECT 470-25V
C208	★87-010-235-010	CAP,ELECT 470-16V
C210	★87-010-268-010	CAP,ELECT 100-10V
C211	★87-010-268-010	CAP,ELECT 100-10V
L201	★S0-05L-002-010	COIL,40UH 1A
L202	★S0-05L-002-010	COIL,40UH 1A
PC101	S0-05P-C01-010	PHOTO COUPLER ON3171R
R101	★S0-05R-001-010	RES,WIRE WOUND 2.2 3W
R102	★S0-05R-001-020	RES,MF 47K 3W
R105	★S0-05R-001-050	RES,MFO 27 1W
R106	★S0-05R-001-060	RES,MFO 39 1W
⚠R107	★87-029-034-010	RES,FUSE 120 1/2W
R203	★87-025-306-010	RES,MF 5.6K 1/2W
R205	★87-025-403-010	RES,MF 1.5K 1/4W
R214	★87-025-245-010	RES,MFO 820 1W
SFR201	★S0-05R-V02-010	SFR,500
T101	★S0-05T-001-010	TRANSFORMER TS29K21V
=== POWER CIRCUIT BOARD-3 SECTION ===		
C301	★87-010-050-010	CAP,ELECT 470-25V
C305	★S0-05C-003-050	CAP,ELECT 33-63V
R305	★S0-05R-003-050	RES,NF 12 1/2W
T301	★S0-05T-003-010	TRANSFORMER F5M-89057
=== MISCELLANEOUS ===		
	S8-059-010-160	UPPER DRUM(W/VIDEO HEAD)
	S8-059-013-040	LOWER DRUM ASSY
DS1	★S6-808-080-040	DEW SENSOR EYH-S10R
M1	S6-004-090-010	CYLINDER MOTOR TM82
M2	S8-059-073-020	CAPSTAN MOTOR ASSY
M3	S8-059-113-010	LOADING MOTOR ASSY
SW4	S6-401-011-510	LEAF SW(REC SAFETY)

PRACTICAL SERVICE FIGURE

Output Level
Video (Impedance) : 1.0±0.2Vp-p (75Ω±20%, Unbalance)
Audio (Impedance) : -8±3dB (Less than 3.3kΩ)
RF Modulated (Impedance): 75±3dBμV (75Ω, Unbalance)

Input Level
Video (Impedance) : 0.5V~2.0V±0.5Vp-p (75Ω±20%, Unbalance)
Audio (Impedance) : -10±3dB (More than 47kΩ)

TV channels received
HV-DK510

Destination	Signal format		VHF		UHF	Remarks MHz
	VHF	UHF	L	H		
GPSKS E	B	G	E2~E4	E5~E12	21~69	VIF 38.9 SIF 33.4
	D	K	R1~R5	R6~R12	21~60	VIF 38.0 SIF 31.5

Tuner AGC : 72±3dB (VHF, UHF)

HV-G50

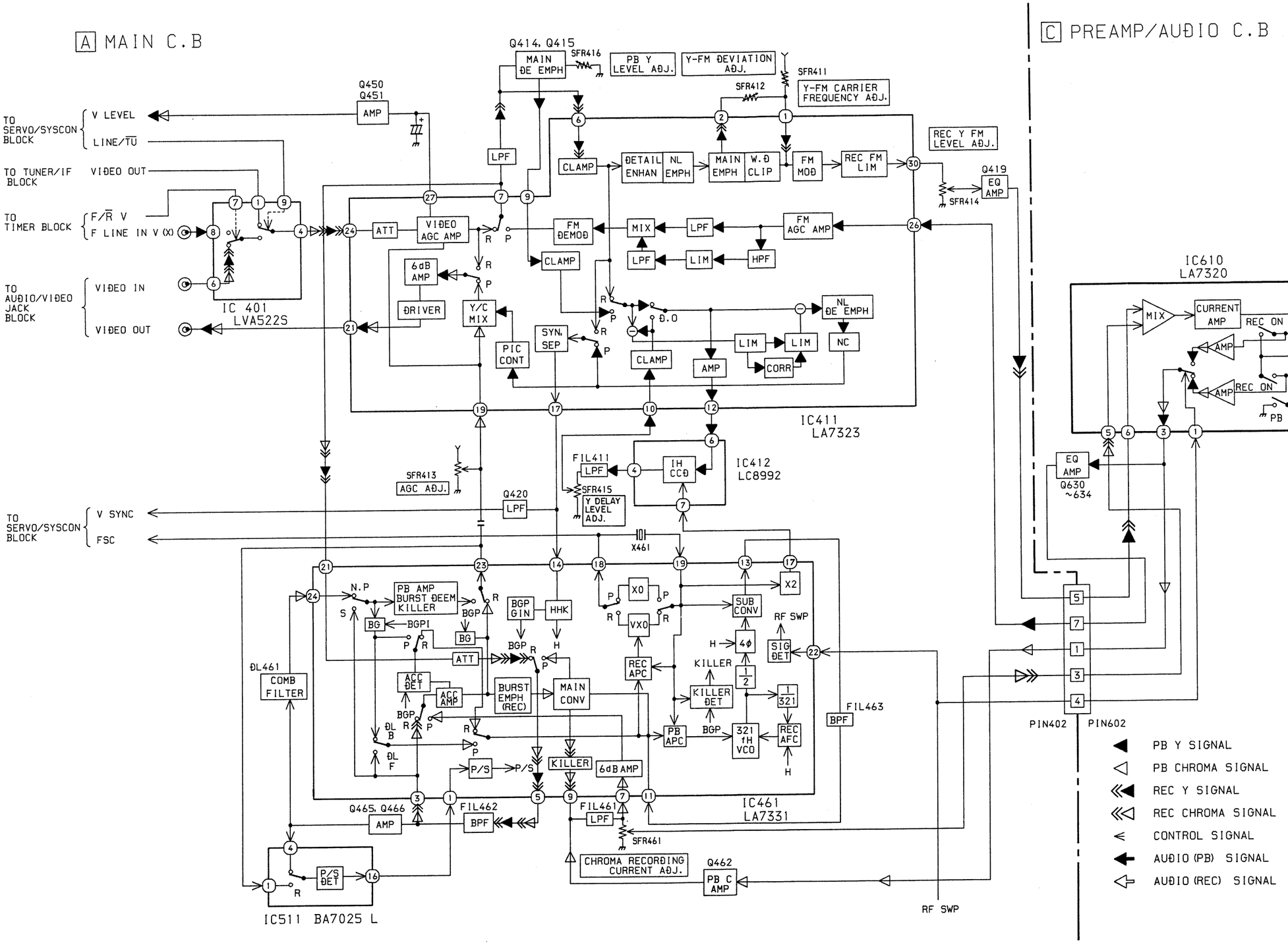
Destination	Signal format		VHF		UHF	Remarks MHz
	VHF	UHF	L	H		
IPF	B	G	I1~E4	E5~E12	21~69	VIF 38.9 SIF 33.4

S/N Ratio
Video (SP mode) : [Test tape MVP-08(PB), MVP-09(PB), TDK HS-120(R/P)]

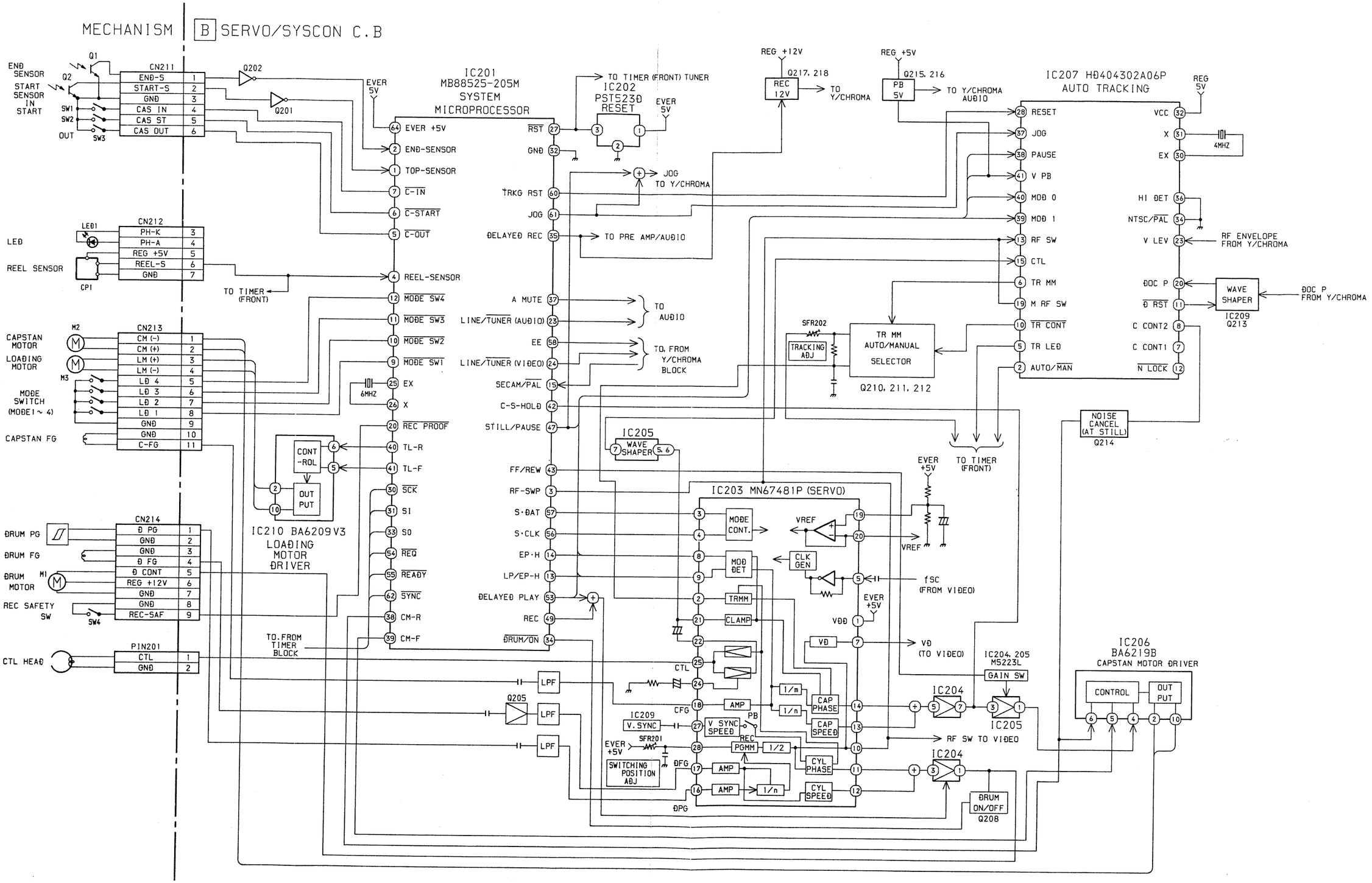
Signal	PB	R/P
Y-Signal	More than 42dB	More than 44.5dB
Chrominance -Signal(AM)	More than 38dB	More than 42dB
Chrominance -Signal(PM)	More than 36dB	More than 38dB

Audio (SP mode) : More than 40dB
Audio Frequency Response: 200Hz~6kHz (±4dB)
(SP mode,
Test tape A-BEX TPV-160S)
Horizontal Resolution : More than 230 lines (PB., R/P)
(Test tape TTV-06T)
Erase Ratio : More than 55dB
Bias Frequency : 70kHz±10%
Tape speed : 23.39mm/sec±0.5%
(SP mode)
Wow & Flutter : Less than 0.4%
(Test tape TTV-P5,
CCIR WTD)
F.F time : Less than 290sec (E-240)
REW time : Less than 290sec (E-240)
Back tension : 46.5±12g-cm
Loading : Less than 3sec
Unloading : Less than 3.5sec

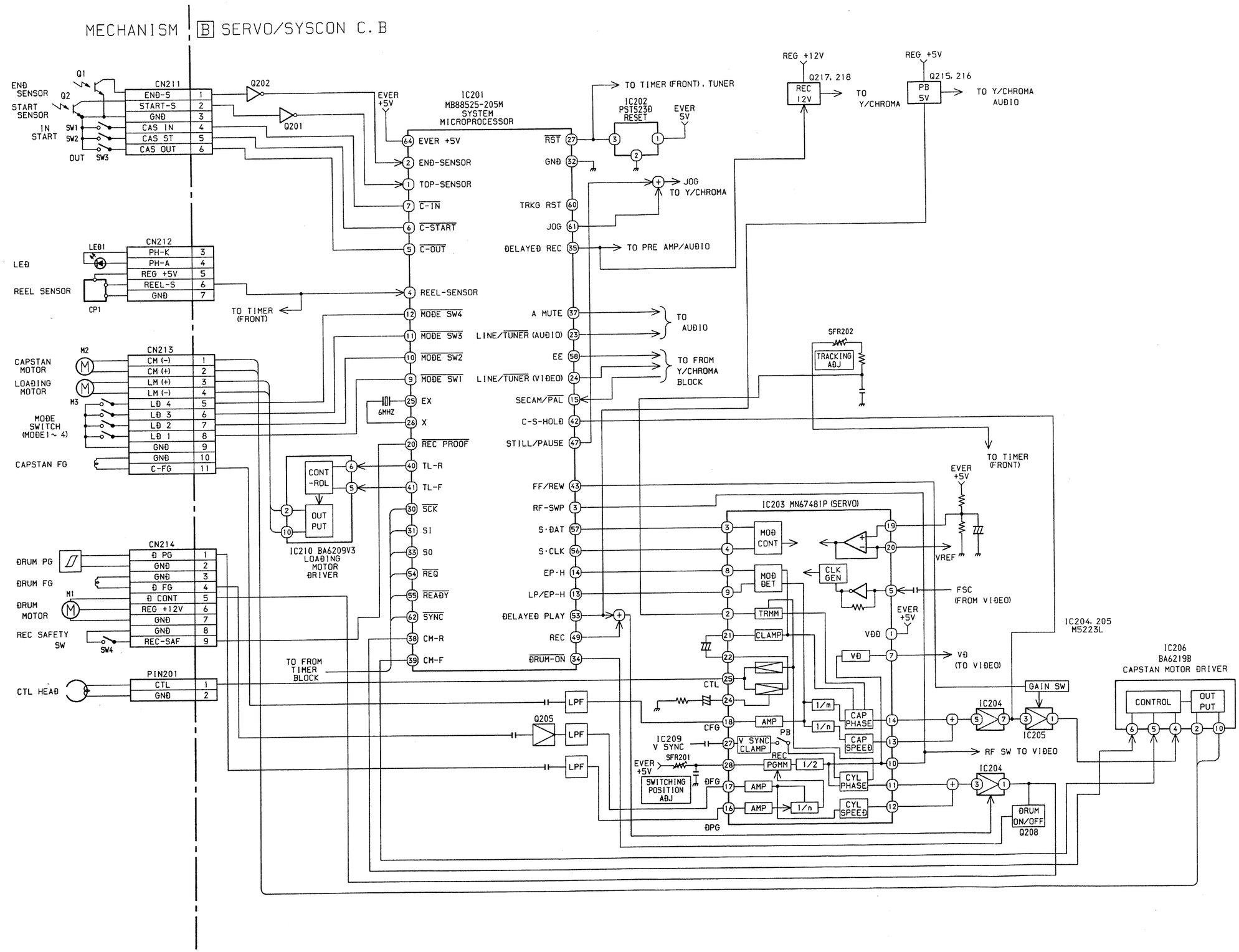
BLOCK DIAGRAM — 1 (VIDEO)



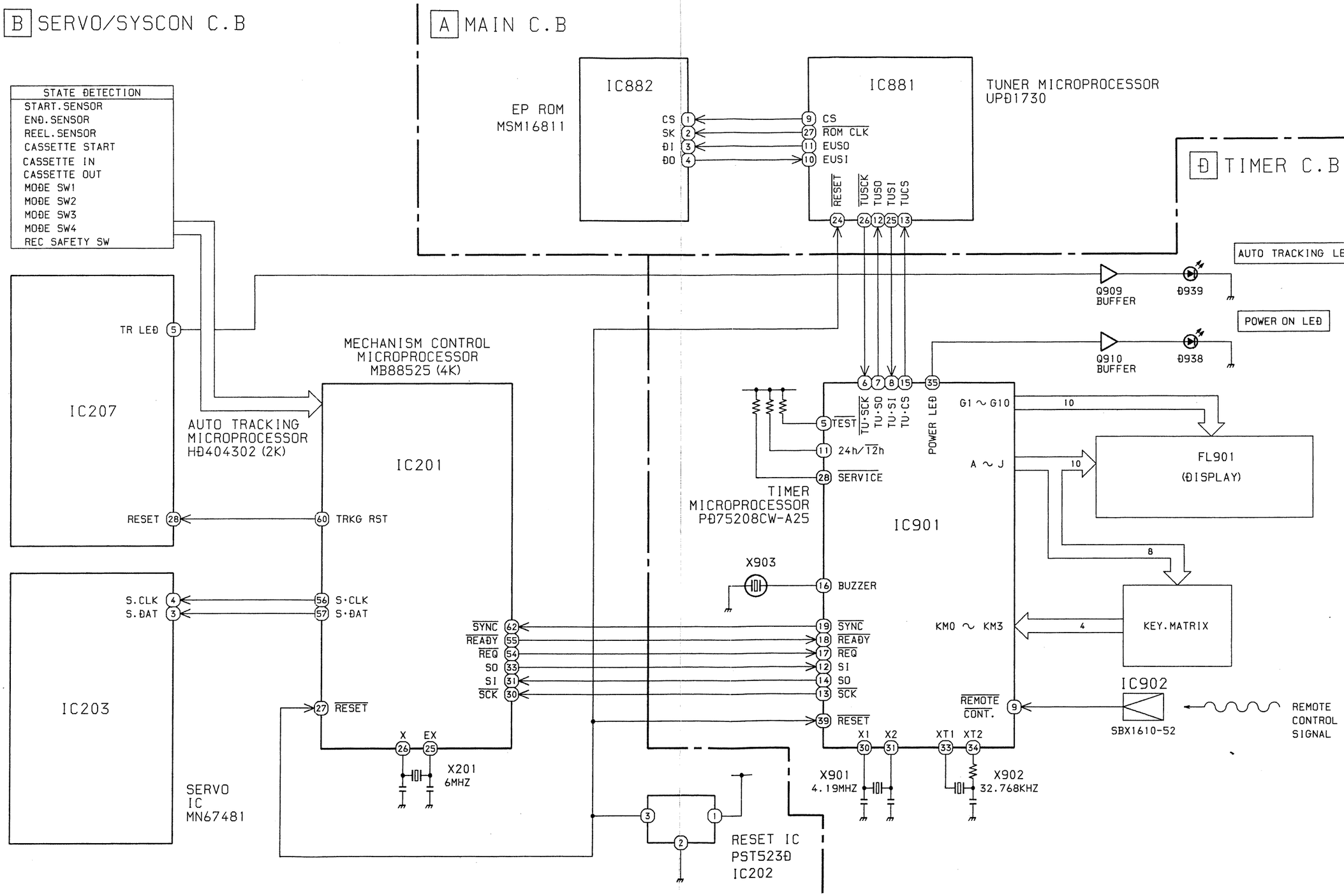
BLOCK DIAGRAM — 2 (SERVO/SYSCON, HV — G50)

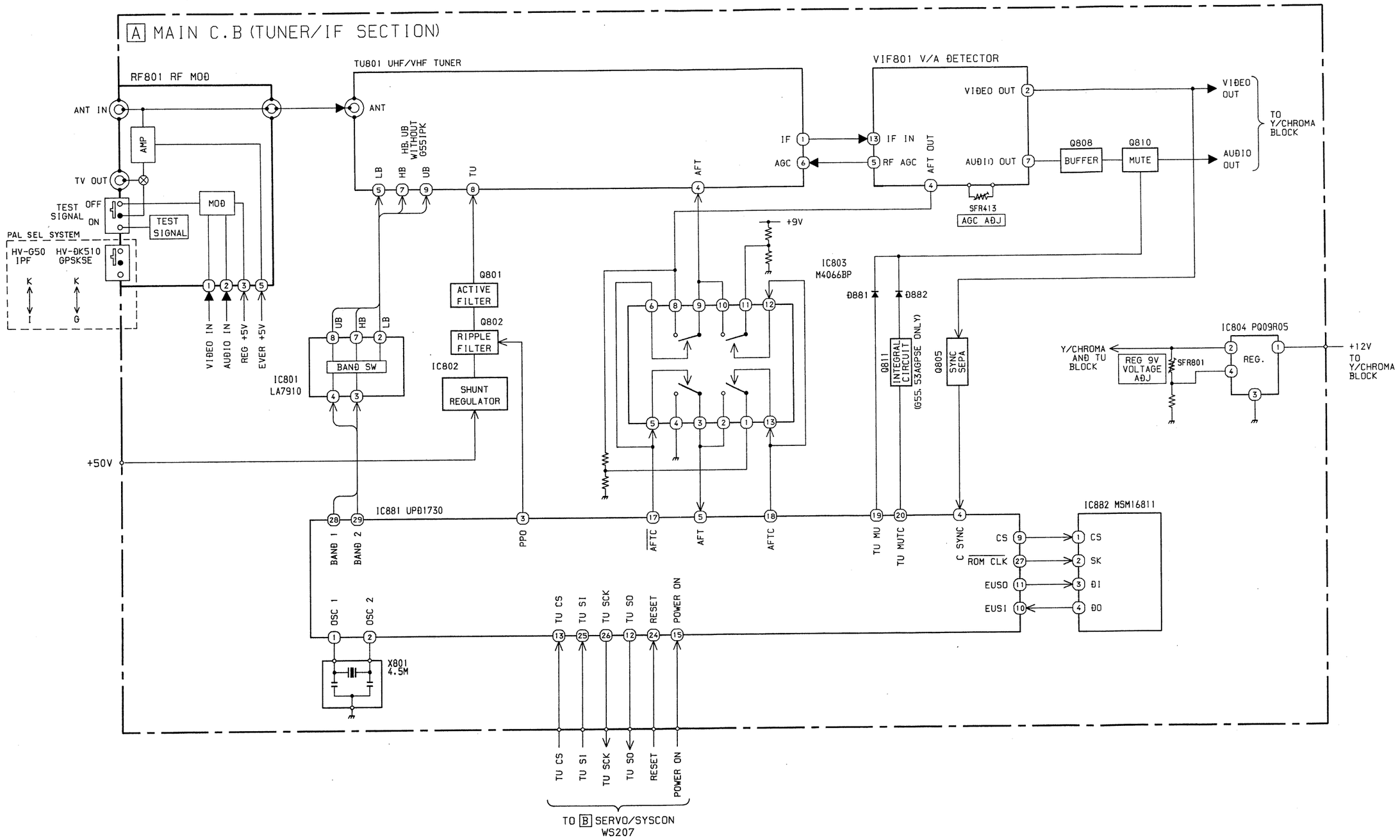


BLOCK DIAGRAM—3 (SERVO/SYSCON, HV—DK510)



BLOCK DIAGRAM — 4 (SYSTEM CONTROL)




A MAIN C.B (TUNER/IF SECTION)
RF801 RF MOD
TU801 UHF/VHF TUNER
VIF801 V/A DETECTOR
ANT IN
AMP
TV OUT
TEST SIGNAL OFF ON
MOD
TEST SIGNAL
PAL SEL SYSTEM
HV-G50 1PF
HV-DK510 GPSK5E
K I
K G
VIDEO IN
AUDIO IN
REG +5V
EVER +5V
ANT
HB, UB WITHOUT G55IPK
LB HB UB TU
IF
AGC
IF IN
RF AGC
AFT OUT
AFT
VIDEO OUT
AUDIO OUT
SFR413
AGC ADJ
Q808
BUFFER
Q810
MUTE
VIDEO OUT
AUDIO OUT
TO Y/CHROMA BLOCK
+9V
IC803
M4066BP
D881
D882
Q811
INTEGRAL CIRCUIT
(G55, 53AGPSE ONLY)
Q805
SYNC SEPA
IC804 PQ09R05
Y/CHROMA AND TU BLOCK
REG 9V VOLTAGE ADJ
SFR801
REG.
+12V
TO Y/CHROMA BLOCK
Q801
ACTIVE FILTER
Q802
RIPPLE FILTER
IC802
SHUNT REGULATOR
UB HB LB
BAND SW
IC801
LA7910
+50V
IC881 UPD1730
BAND 1
BAND 2
PPO
AFTC
AFT
AFTC
TU MU
TU MUTC
C SYNC
IC882 MSM16811
CS
ROM CLK
EUSO
EUSI
SK
DI
DO
OSC 1
OSC 2
X801
4.5M
TU CS
TU SI
TU SCK
TU SO
RESET
POWER ON
TO B SERVO/SYSCON
WS207

MECHANISM

C PRE AMP/AUDIO C.B

AUDIO ERASE HEAD

FULL ERASE HEAD

AUDIO HEAD

T701, Q701

BIAS OSC

SFR701
RECORDING BIAS CURRENT ADJ

IC701
IC, BA7767AS

20 13 31 28

V REG

BIAS REG

29

REG+12V (VCC)

IC581 LVA522S

4

TUNER

LINE IN

A MAIN C.B

11

25

REC EQ. AMP

P.B

ALC

EE/REC

LINE AMP.

P.B

B.F

17

MUTE

AUDIO

TO Y/CHROMA BLOCK

4

PB EQ. AMP

P.B

MUTE

8 9 14 15 16 18 26 10

ATT

PB 5V

D-REC 5V

AUDIO MUTE

TO SERVO/SYSCON BLOCK

T101

AC IN
108V~264V
(90V~264V)
50/60HZ

L101, C101
LINE FILTER BLOCK

D101, R101, C104
PRIMARY RECTIFIER BLOCK

PRIMARY GND

C107
R103, 104
START UP BLOCK

R102
C105, 106
SNABA BLOCK

2 3 1 5 6 4

HIC101

D201, L201
C203, 204
+18V RECTIFIER BLOCK

UNREG +18V

D202, L202
C205, 207
+12V RECTIFIER BLOCK

R206, 207
Q201, 202

REG +12V

P ON

D203, C206
+7.5V RECTIFIER BLOCK

IC204, Q205, 206
5V REGULATER

REG +5V

IC203
5V REGULATER

EVER +5V

PC101

R202, 205, RV201
C301, 202, IC201

ΔV

T301

D303, C305
+50V RECTIFIER

UNREG +50V

D305, C306
-30V RECTIFIER

UNREG -30V

Q301

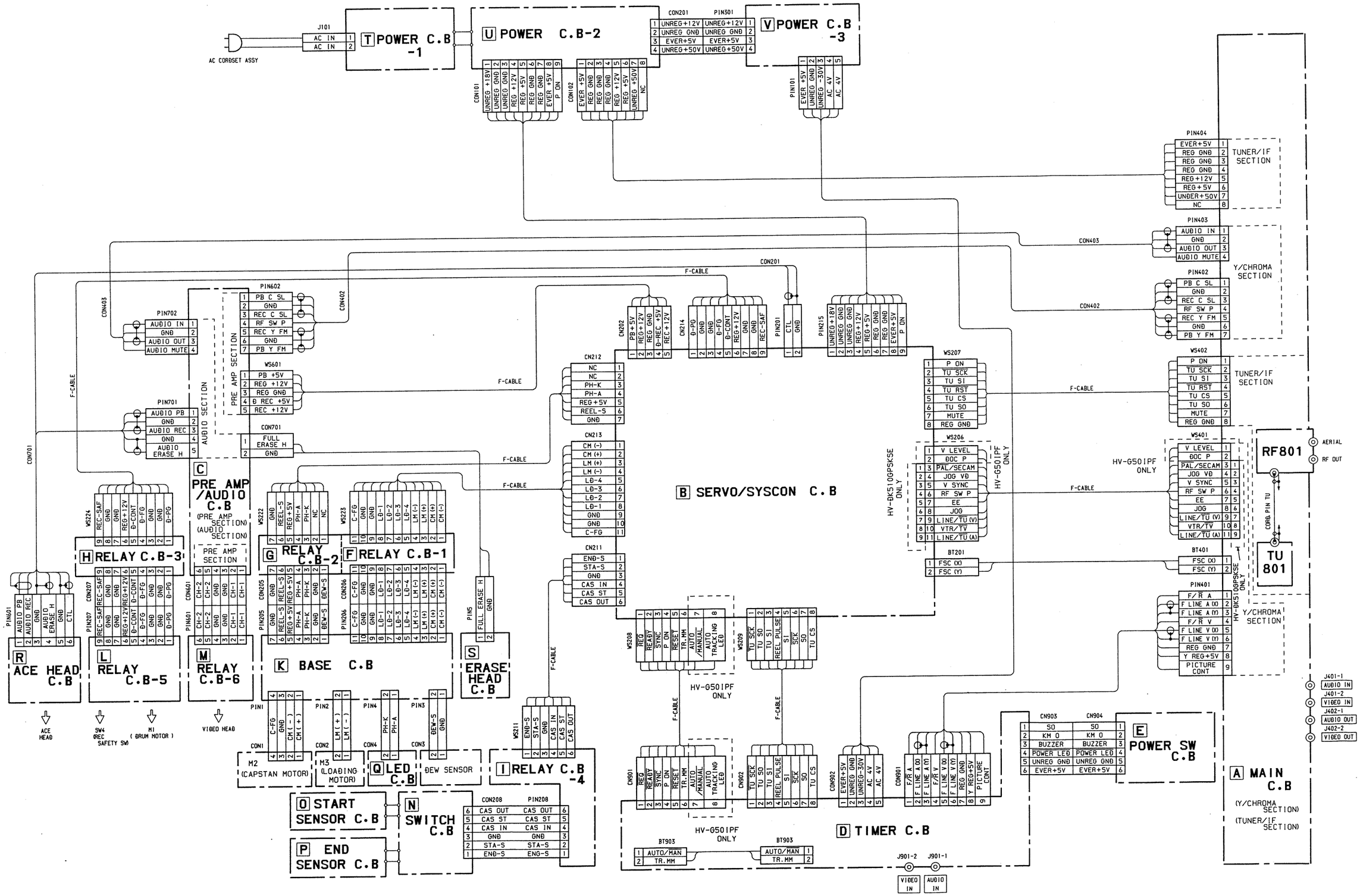
AC 4V

AC 4V

Q302
R304
D304

ΔV

WIRE HARNESS DIAGRAM



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A B C D E F G H I J K

A MAIN C.B

To U POWER C.B-2 CON102

To C PRE AMP/AUDIO C.B PIN602 VIA CON402

To J AUDIO/VIDEO JACK C.B WS411

To CN405

To PIN402

To D TIMER C.B CON901

To PIN401

To C PRE AMP/AUDIO C.B PIN702 VIA CON403

VIDEO OUT | AUDIO OUT | VIDEO IN | AUDIO IN

RF MOD

B SERVO/SYSCON C.B

To C PRE AMP/AUDIO C.B WS601

To D POWER C.B-2 CON101

To F RELAY C.B-1 WS223

To E ACE HEAD C.B PIN6 VIA CON201

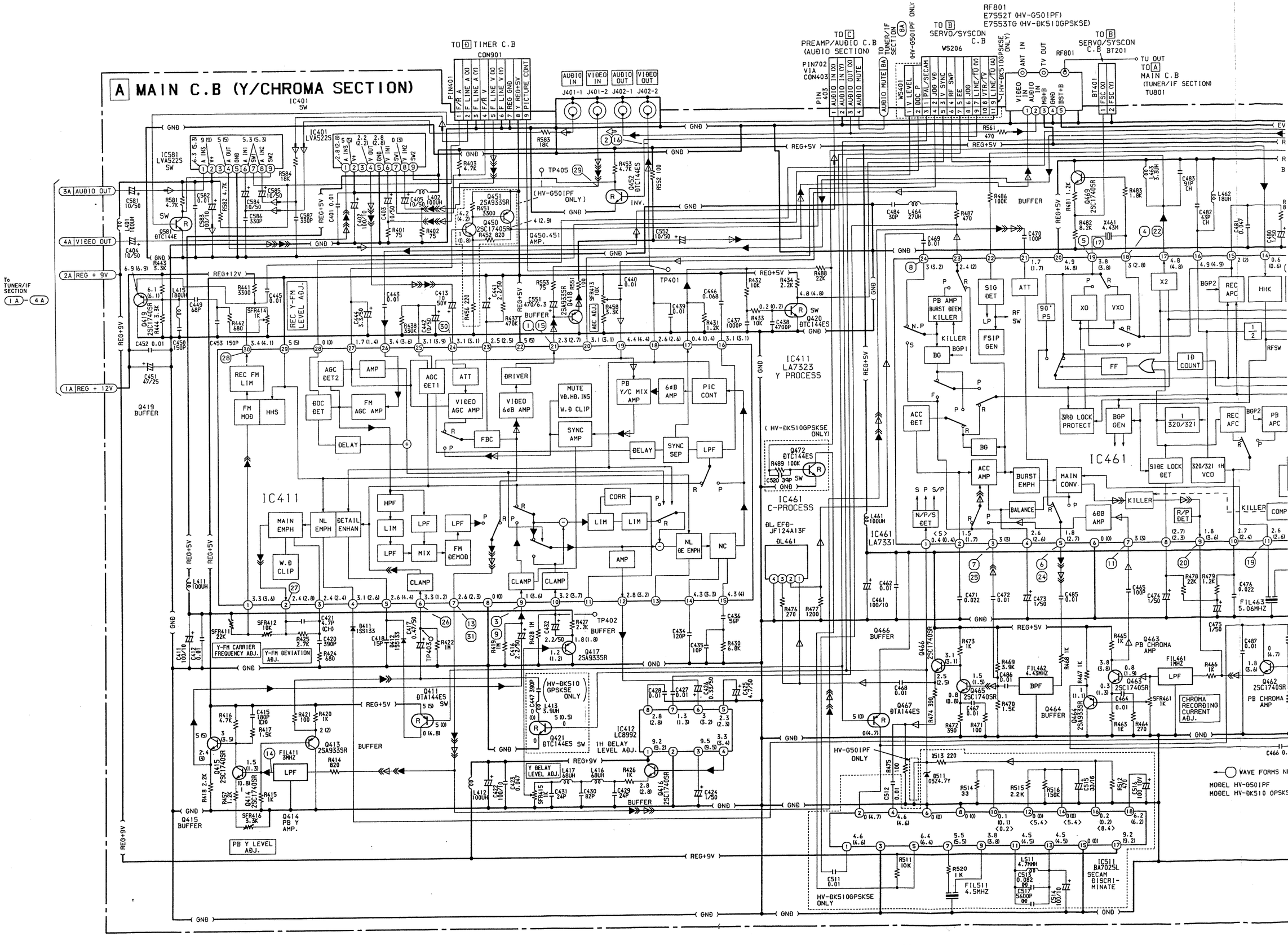
To G RELAY C.B-2 WS222

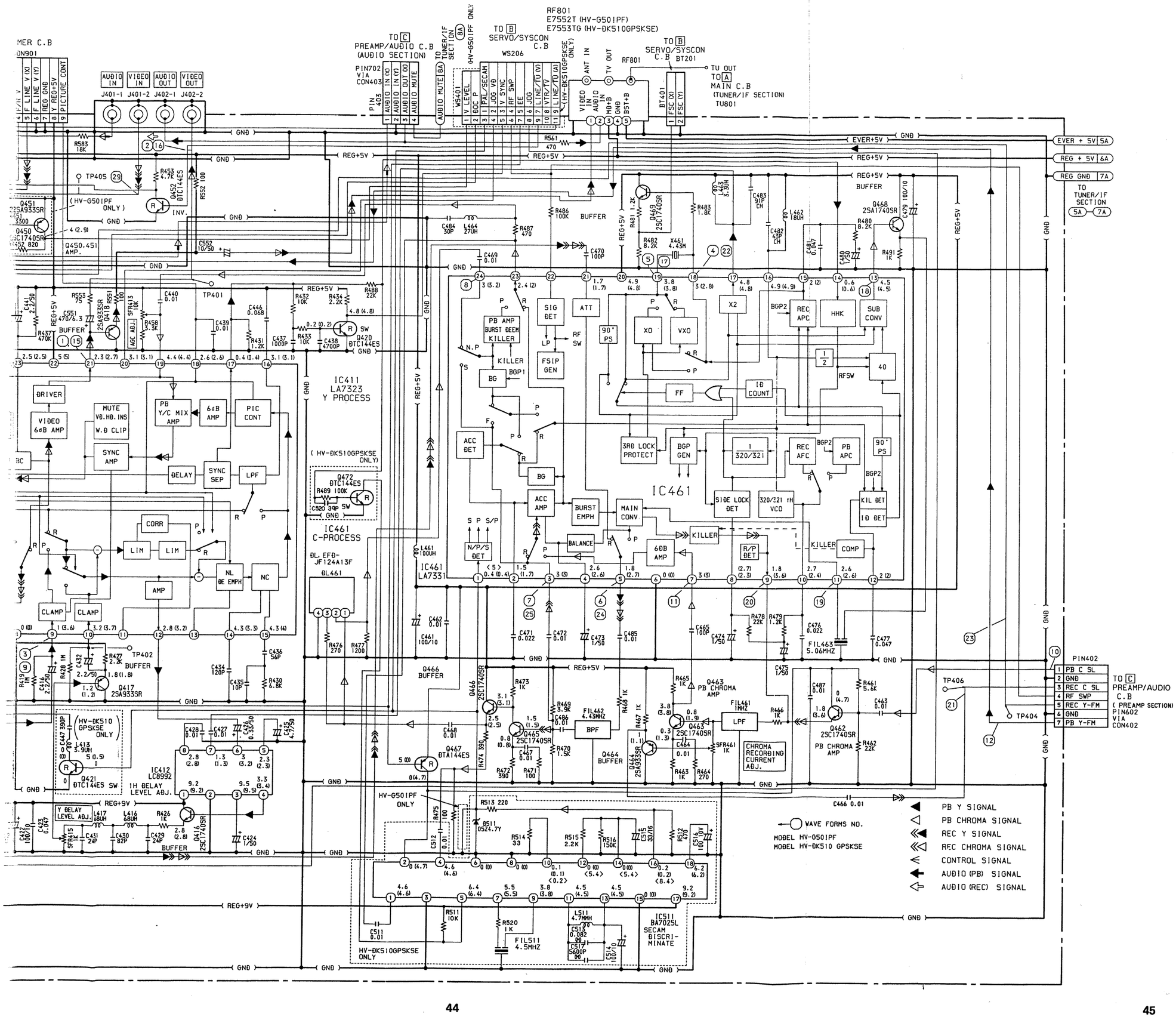
To H RELAY C.B-3 WS224

To I RELAY C.B-4 WS211

To D TIMER C.B CN902

To D TIMER C.B CN901

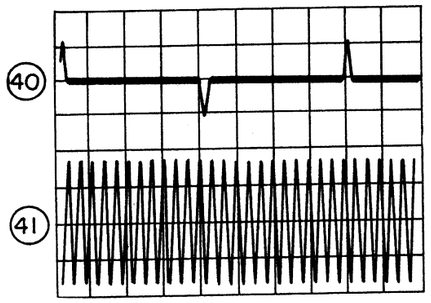

A MAIN C.B (Y/CHROMA SECTION)
TO D TIMER C.B
CON901
TO C PREAMP/AUDIO C.B (AUDIO SECTION)
PIN702 VIA CON403
TO TUNER/IF SECTION (8A)
HV-G501PF ONLY
TO B SERVO/SYSCON C.B
WS206
RF801 E7552T (HV-G501PF) E7553TG (HV-DK510GPSKSE)
HV-DK510GPSKSE ONLY
ANT IN
TV OUT
RF801
TO B SERVO/SYSCON C.B BT201
TU OUT
TO A MAIN C.B (TUNER/IF SECTION) TU801
BT401
IC401 SW
IC401 LVA522S
IC581 LVA522S SW
PIN401
AUDIO IN
VIDEO IN
AUDIO OUT
VIDEO OUT
J401-1
J401-2
J402-1
J402-2
3A AUDIO OUT
4A VIDEO OUT
2A REG + 9V
1A REG + 12V
To TUNER/IF SECTION 1A - 4A
GND
REG+5V
REG+9V
REG+12V
TP405
TP401
TP402
(HV-G501PF ONLY)
Q450.451 AMP.
Q451 2SA933SR
Q450 2SC1740SR
Q452 DTC144ES
Q581 DTC144E
Q419 2SC1740SR
Q419 BUFFER
Q420 DTC144ES
Q472 DTC144ES
Q411 DTA144ES
Q421 DTC144ES
Q413 2SA933SR
Q415 2SC1740SR
Q414 2SC1740SR
Q415 BUFFER
Q414 PB Y AMP.
Q417 2SA933SR
Q416 2SC1740SR
Q469 2SC1740SR
Q463 2SC1740SR
Q465 2SC1740SR
Q467 DTA144ES
Q466 BUFFER
Q464 BUFFER
Q444 2SA933SR
BUFFER
INV.
SW
IC411 LA7323 Y PROCESS
IC461 C-PROCESS
IC461 LA7331
IC412 LC8992
IC511 BA7025L SECAM DISCRI-MINATE
REC FM LIM
FM MOD
HHS
AGC DET2
AMP
AGC DET1
ATT
DRIVER
DOC DET
FM AGC AMP
VIDEO AGC AMP
VIDEO 6dB AMP
MUTE VB.HD.INS W.D CLIP
PB Y/C MIX AMP
6dB AMP
PIC CONT
DELAY
FBC
SYNC AMP
SYNC SEP
LPF
MAIN EMPH
NL EMPH
DETAIL ENHAN
W.D CLIP
HPF
LIM
MIX
FM DEMOD
CLAMP
CORR
NL DE EMPH
NC
AMP
REC Y-FM LEVEL ADJ.
Y-FM CARRIER FREQUENCY ADJ.
Y-FM DEVIATION ADJ.
PB Y LEVEL ADJ.
Y DELAY LEVEL ADJ.
1H DELAY LEVEL ADJ.
HV-DK510 GPSKSE ONLY
HV-G501PF ONLY
HV-DK510GPSKSE ONLY
BUFFER
PB AMP BURST DEEM KILLER
KILLER
BGP1
BG
FSIP GEN
SIG DET
ATT
90° PS
RF SW
XO
VXO
X2
BGP2
REC APC
HHK
PB APC
FF
ID COUNT
3RD LOCK PROTECT
BGP GEN
1/320/321
REC AFC
ACC DET
ACC AMP
BURST EMPH
MAIN CONV
SIDE LOCK DET
320/321 1H VCO
BALANCE
6DB AMP
R/P DET
N/P/S DET
CHROMA RECORDING CURRENT ADJ.
PB CHROMA AMP
BPF
LPF
WAVE FORMS NO
MODEL HV-G501PF
MODEL HV-DK510 GPSKS


IC411
LA7323
Y PROCESS
IC461
C-PROCESS
IC461
LA7331
IC461
IC412
LC8992
1H DELAY
LEVEL ADJ.
IC511
BA7025L
SECAM
DISCRI-
MINATE
RF801
E7552T (HV-G501PF)
E7553TG (HV-DK510GPSKSE)
TO C
PREAMP/AUDIO C.B
(AUDIO SECTION)
TO B
SERVO/SYSCON C.B
TO TUNER/IF SECTION
TO A
MAIN C.B
(TUNER/IF SECTION)
TU801
TO B
SERVO/SYSCON C.B
BT201
TU OUT
EVER + 5V 5A
REG + 5V 6A
REG GND 7A
TO TUNER/IF SECTION
PIN402
TO C
PREAMP/AUDIO C.B
(PREAMP SECTION)
PIN602
VIA
CON402
PB Y SIGNAL
PB CHROMA SIGNAL
REC Y SIGNAL
REC CHROMA SIGNAL
CONTROL SIGNAL
AUDIO (PB) SIGNAL
AUDIO (REC) SIGNAL
WAVE FORMS NO.
MODEL HV-G501PF
MODEL HV-DK510 GPSKSE
(HV-DK510GPSKSE ONLY)
HV-G501PF ONLY
HV-DK510 GPSKSE ONLY
BUFFER
AMP
INV.
DRIVER
VIDEO 6dB AMP
MUTE
VB.HD.INS
W.D CLIP
SYNC AMP
DELAY
SYNC SEP
LPF
PB Y/C MIX AMP
6dB AMP
PIC CONT
CORR
LIM
NL
DE EMPH
NC
CLAMP
PB AMP BURST DEEM KILLER
SIG DET
ATT
LP
RF SW
FSIP GEN
90° PS
XO
VXO
X2
BGP2
REC APC
HHK
SUB CONV
1/2
40
RFSW
FF
ID COUNT
ACC DET
BG
BGP1
3RD LOCK PROTECT
BGP GEN
1/320/321
REC AFC
PB APC
90° PS
KIL DET
ID DET
ACC AMP
BURST EMPH
MAIN CONV
SIDE LOCK DET
320/221 1H VCO
BALANCE
KILLER
COMP
N/P/S DET
R/P DET
6DB AMP
CHROMA RECORDING CURRENT ADJ.
PB CHROMA AMP
BPF
LPF
Q463 PB CHROMA AMP
Q466 BUFFER
Q467 BUFFER
Q468 BUFFER
Q469 BUFFER
Q450,451 AMP.
Q417 25A933SR
Q421 DTC144ES SW
Q450 2SC1740SR
Q451 2SA933SR
Q462 2SC1740SR
Q463 2SC1740SR
Q465 2SC1740SR
Q466 2SC1740SR
Q468 2SA1740SR
Q469 2SC1740SR
Q472 DTC144ES
Q416 2SC1740SR
Q467 DTA144ES
FIL463 5.06MHZ
FIL462 4.43MHZ
FIL461 1MHZ
FIL511 4.5MHZ
X461 4.43M
TP401
TP402
TP404
TP405
TP406
EVER+5V
REG+5V
REG+9V
GND

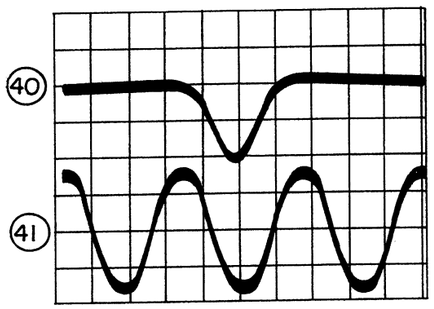
WAVE FORM — 1

SERVO WAVE FORM

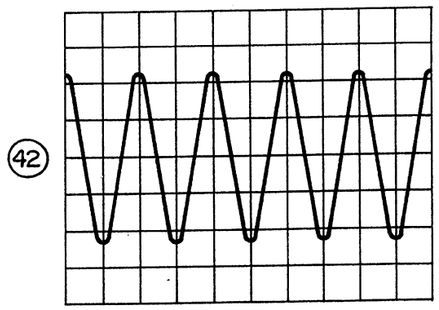
1. DRUM PG AND FG
   Upper : DRUM PG AC 0.1V/div.
   (IC203 pin ⑯)
   Lower : DRUM FG AC 50mV/div.
   (IC203 pin ⑰)
   Time 5ms/div.



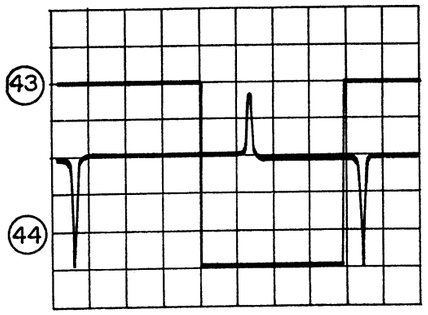
2. DRUM PG AND FG
   Enlargement of 1
   The PG pulse (upper) is generated (either positive or negative) when the FG pulse (lower) is a negative half wave.



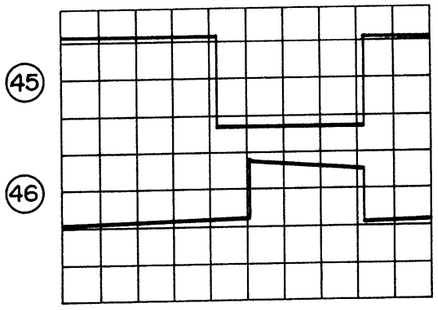
3. CAPSTAN FG (IC203 pin ⑱)
   AC 0.1V/div.
   Time 1ms/div.



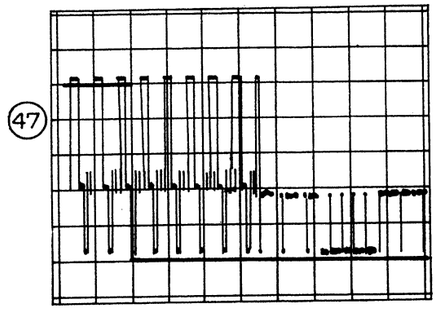
4. RF SW PULSE AND CTL (PB MODE)
   RF SW PULSE DC 1V/div. (IC203 pin ⑩)
   CTL AC 0.5V/div. (IC203 pin ㉒)
   Time 5ms/div.
   The CTL pulse (negative) is 2.3±0.3ms from the leading edge of the RF SW pulse.

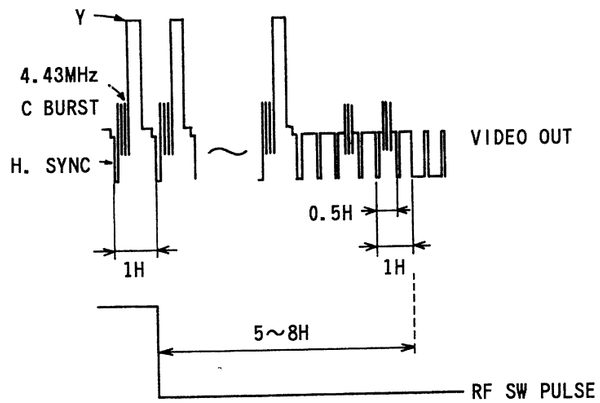


5. RF SW PULSE AND CTL (REC MODE)
   Upper : RF SW PULSE DC 2V/div.
   (IC203 pin ⑩)
   Lower : CTL AC 2V/div.
   (IC203 pin ㉒)
   Time 5ms/div.

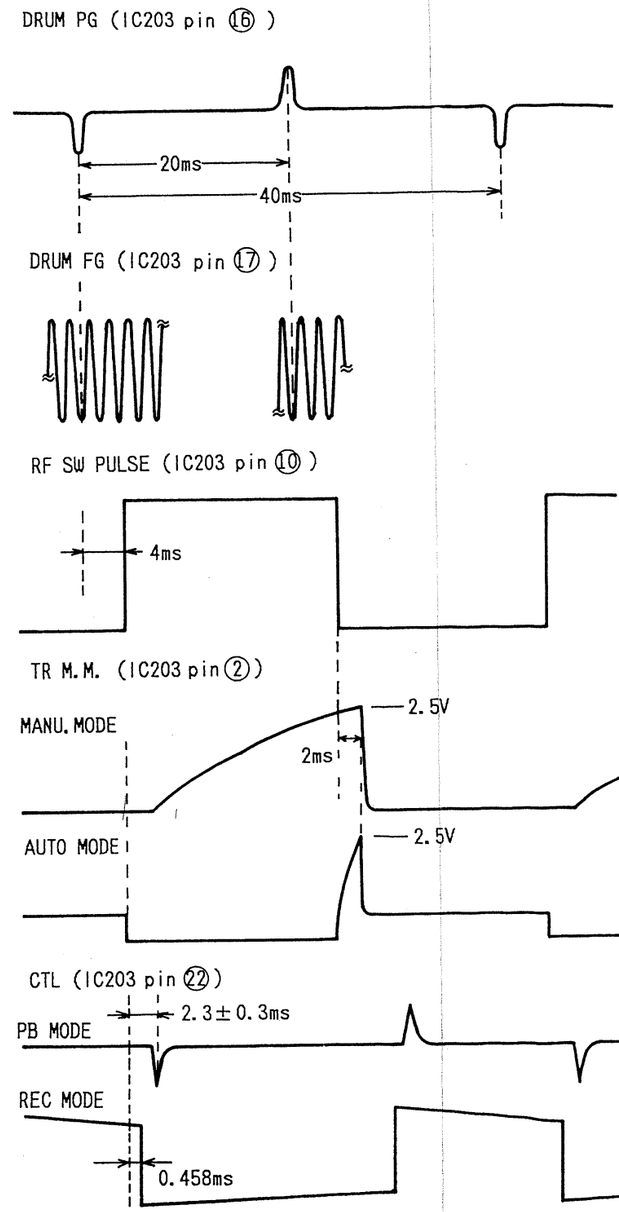


6. RF SW PULSE AND VIDEO OUT
   RF SW PULSE DC 1V/div. (IC203 pin ⑩)
   Video out (OPEN) AC 0.5V/div.
   Time 0.1ms/div.
   The RF SW pulse rises of falls 5～8H (320～512μs) before the VD (vertical sync) signal in the video signal.





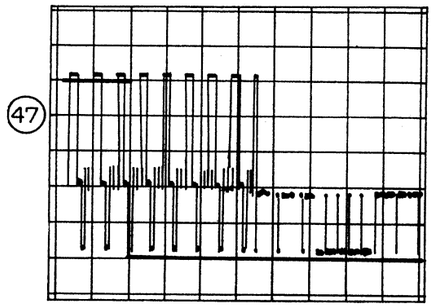
DRUM SERVO SYSTEM TIMING CHART

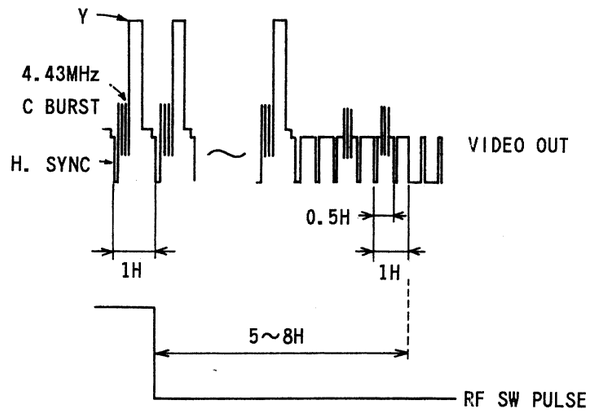


))
22)

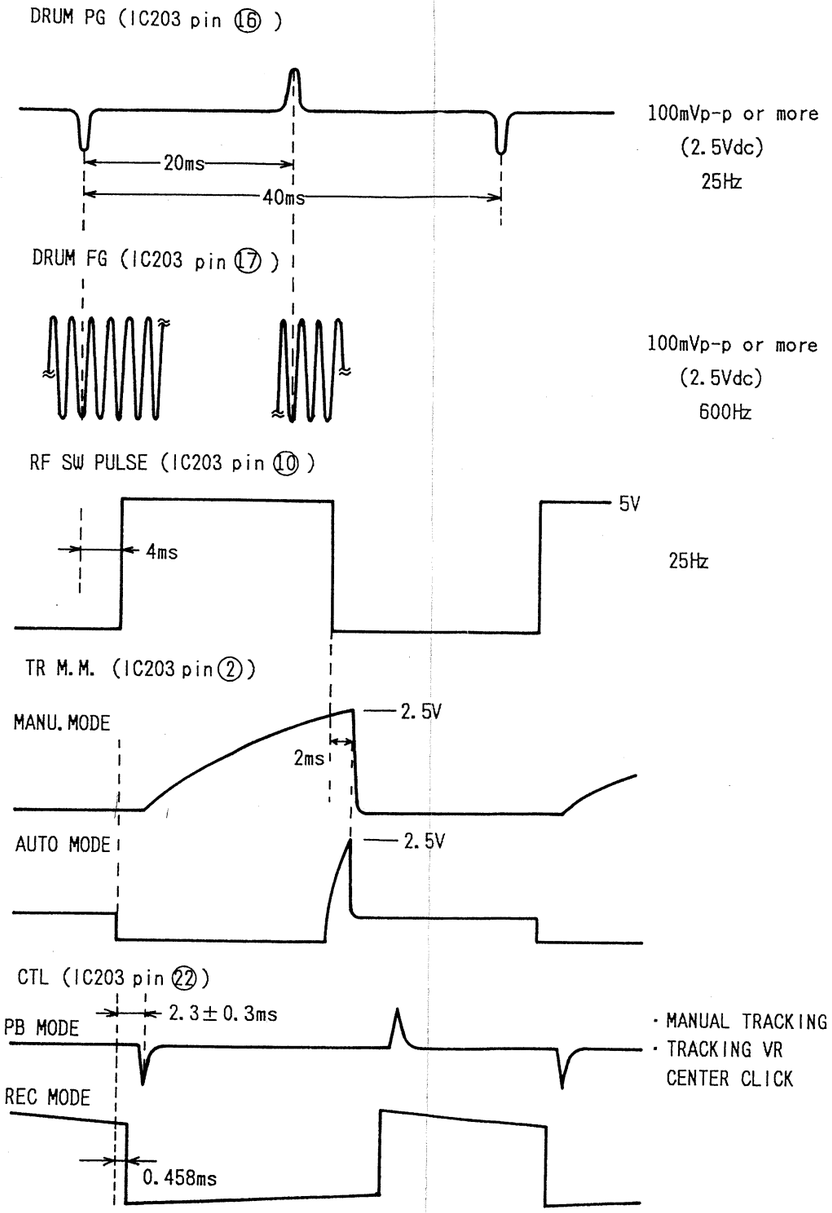
se.

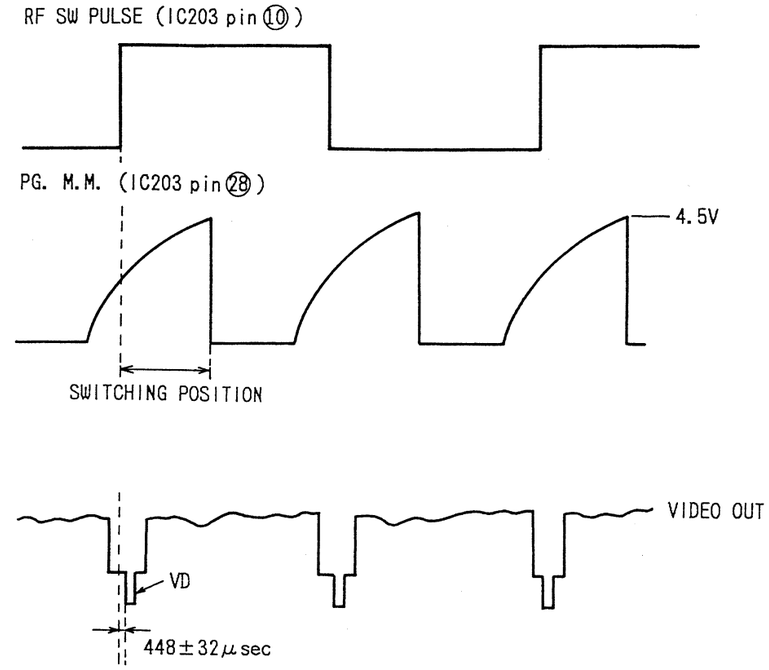
6. RF SW PULSE AND VIDEO OUT
   RF SW PULSE DC 1V/div. (IC203 pin ⑩)
   Video out (OPEN) AC 0.5V/div.
   Time 0.1ms/div.
   The RF SW pulse rises of falls 5～8H (320～512μs) before the VD (vertical sync) signal in the video signal.



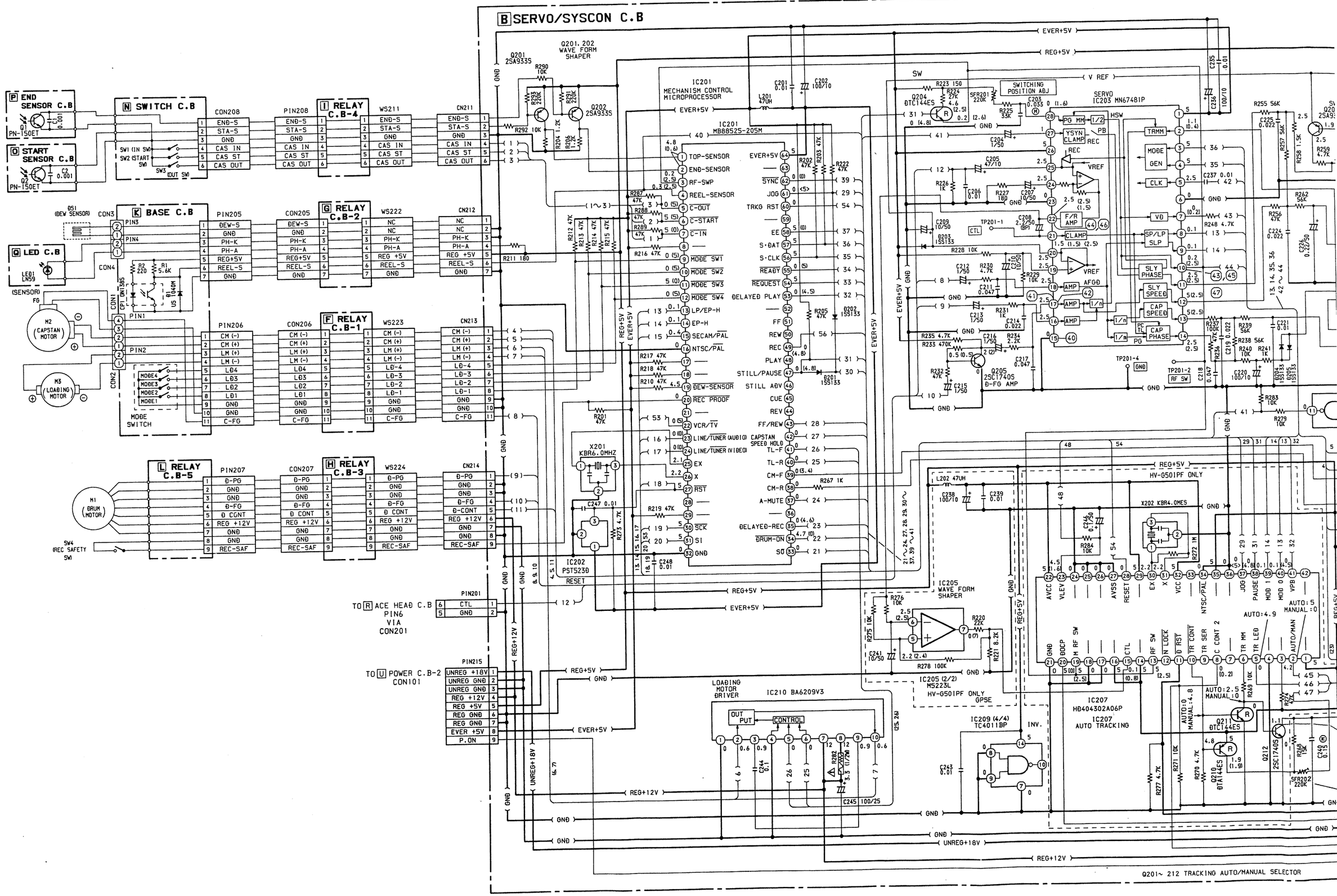


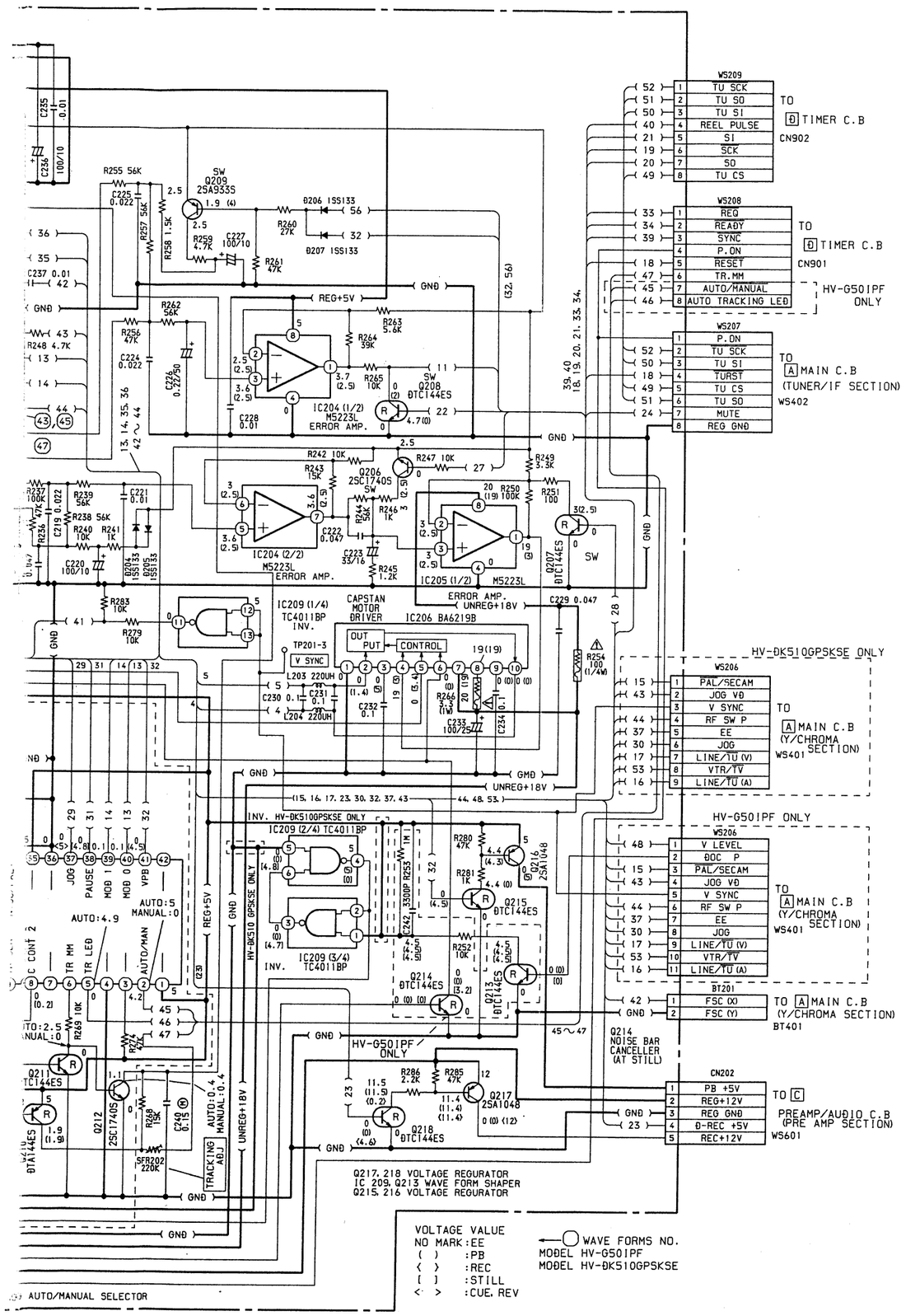
DRUM SERVO SYSTEM TIMING CHART





SCHEMATIC DIAGRAM — 2 (SERVO/SYSCON)

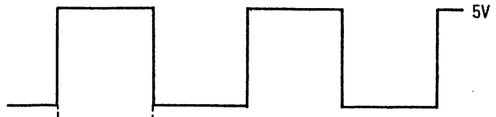




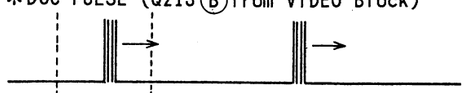
NOISE CANCELLER TIMING CHART

〈During cancelling〉

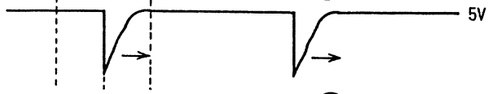
*RF SW PULSE (IC207 pin ⑲)



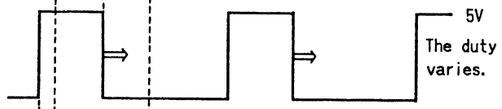
*DOC PULSE (Q213 Ⓑ from VIDEO Block)



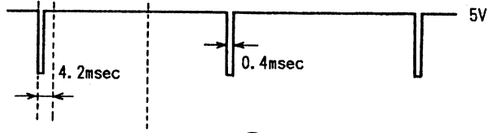
*DOC PULSE (1) (IC209 pin ①)



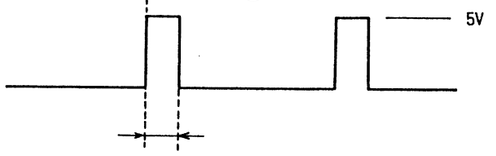
*DOC PULSE (2) (IC207 pin ⑳)



*$\overline{\text{D RST}}$ (IC207 pin ⑪)



*C. CONT (IC209 pin ①)

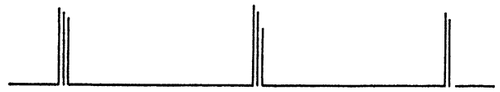


※This is a wave form when a noise bar is moved by slightly turning the capstan motor gradually using the C. CONT pulse.

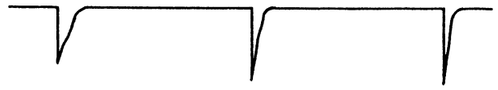
〈When cancelling finishes〉

*RF SW PULSE (IC207 pin ⑲)

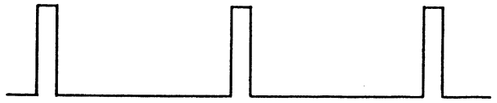
*DOC PULSE (Q213 Ⓑ)



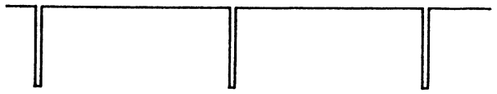
*DOC PULSE (1) (IC209 pin ①)



*DOC PULSE (2) (IC207 pin ⑳)

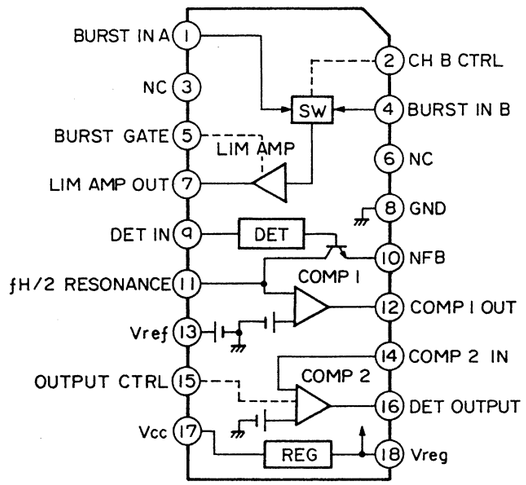


*$\overline{\text{D RST}}$ (IC207 pin ⑪)

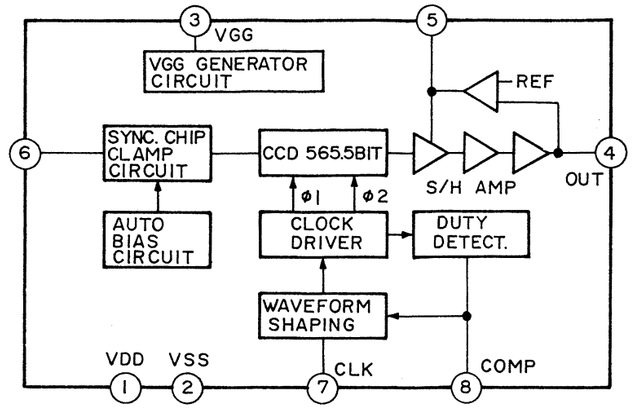


IC BLOCK DIAGRAM — 1

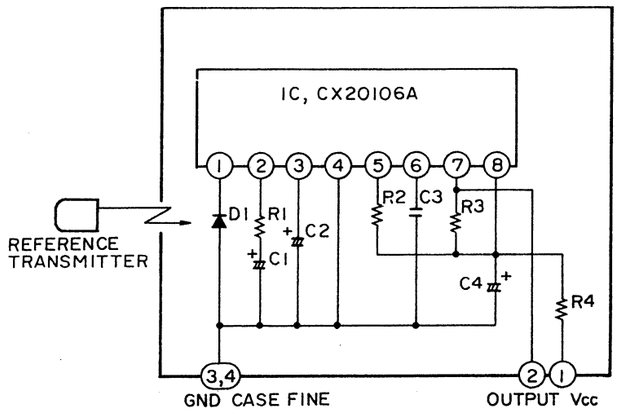
IC,BA7025L



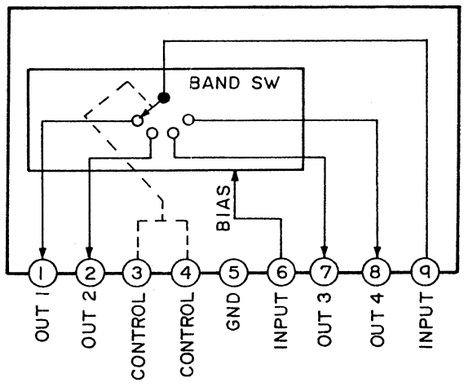
IC,LC8992



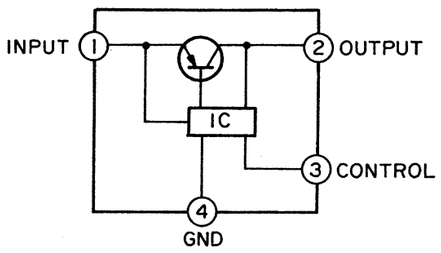
IC,SBX1610



IC,LA7910



IC,PQ09R05

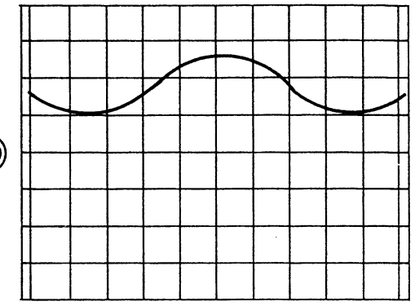


WAVE FORM — 2

AUDIO WAVE FORM

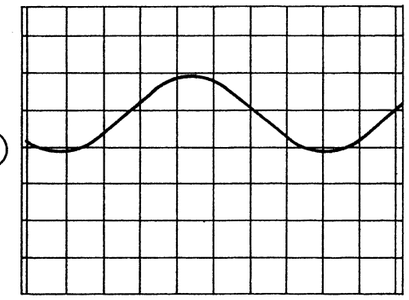
T701 pin (1)
5V/div.
2μs/div.

(70)



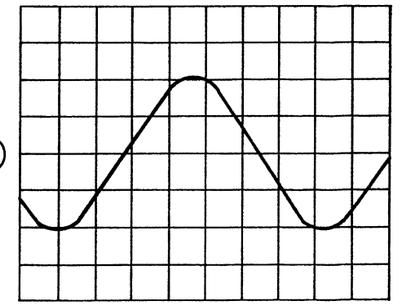
T701 pin (3)
10V/div.
2μs/div.

(71)

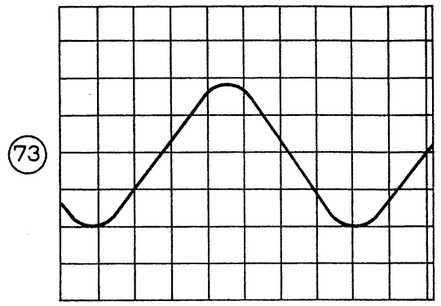


T701 pin (5)
10V/div.
2μs/div.

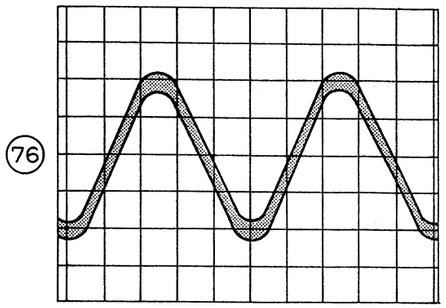
(72)



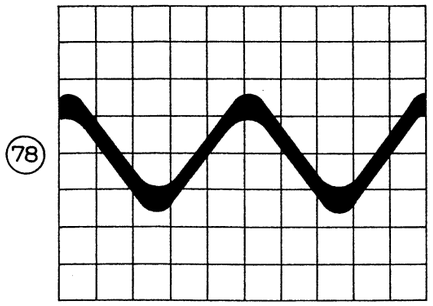
T701 pin ⑥
20V/div.
2μs/div.



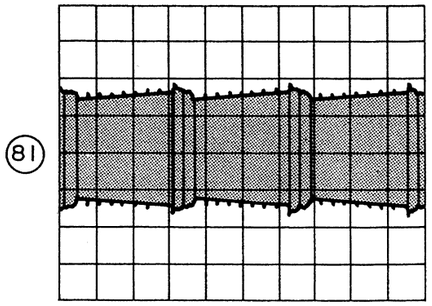
IC701 pins ⑦ and ⑧
20mV/div.
200μs/div.



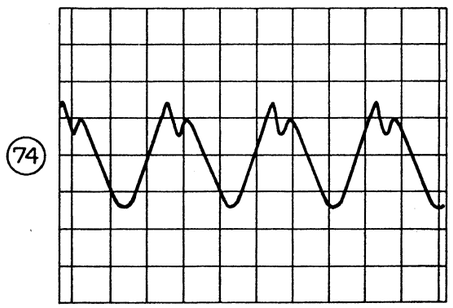
- The wave form shown in the photo on the left is at pins ⑳ and ㉓ of IC701.
- IC701 pin ㉕ is 1.53Vp-p.
  50mV/div.
  200μs/div.



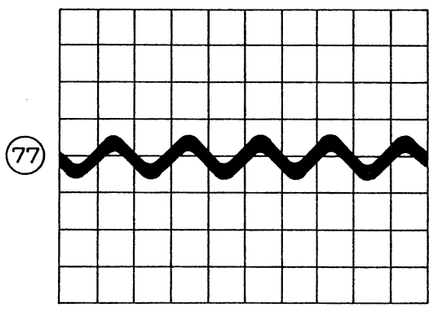
PIN602 pin ⑤ (REC)
20μs/div.
100mV/div.



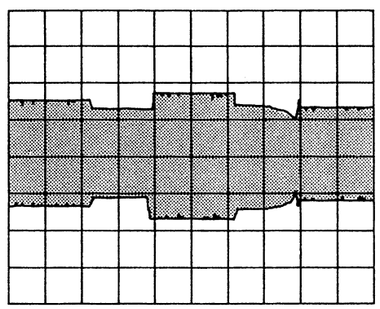
Q701 base
1V/div.
5μs/div.



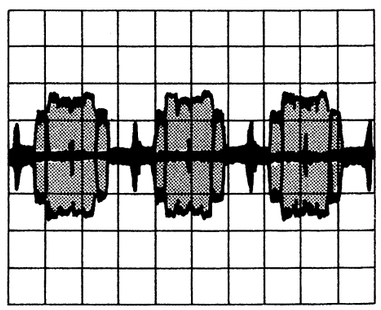
- The wave form shown in the photo on the left is at pin ⑪ of IC701.
- IC701 pins ⑭ to ⑰ are 900mVp-p.
- The specification of the EE level is -8.5 ±1dBs when a 1kHz−10dBs signal is input.
  20mV/div.
  500μs/div.



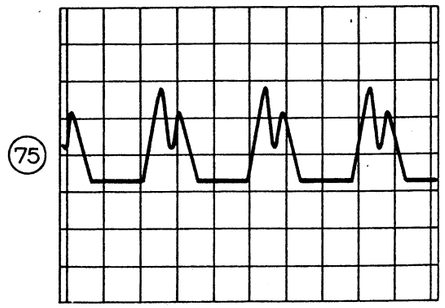
PIN602 pin ① (PB)
5ms/div.
100mV/div.



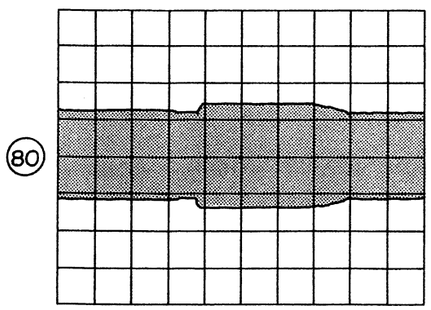
PIN602 pin ③ (REC)
20μs/div.
20mV/div.



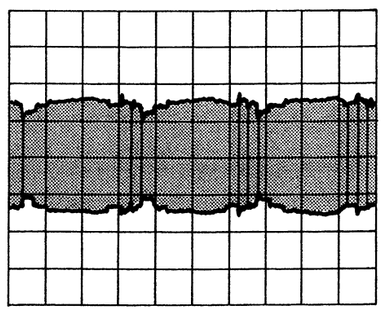
Q701 emitter
500mV/div.
5μs/div.



PIN602 pin ⑦ (PB)
5ms/div.
200mV/div.



IC610 pin ⑱ (REC)
20μs/div.
50mV/div.



A MAIN C.B (TUNER/IF SECTION)

VIF801 (IF PACK)
VNA101S (HV-G501PF)
VNA10ZM (HV-ØK510GPSKSE)

IF IN | GND | NC | NC | VCC | GND | AUDIO OUT | NC | RF AGC | AFT OUT | AFT MUTE | VIDEO OUT | AUDIO MUTE

TO A MAIN C.B (Y CHROMA SECTION) RF801

TU801 TUNER PACK: IF, MB, AFT, LB, AGC, HB, TU, VB

4EC-721 (HV-G501PF)
F4EH-721 (HV-ØK510GPSKSE)

IC801 LA7910: OUT 3, OUT 2, OUT 1, IN 2, IN 1

BAND SWITCH

IC882 MSM16811: CS, SK, DI, DO, VCC, NC, ORG, GND

IC881 UPB1730: OSC1, OSC2, BAND2, BAND1, C SYNC, AFT, TU SCK, TU SI, RESET, GND, VDD, AUS, CS, EUSI, EUSO, TUMTC, TU SO, TU MU, TU CS AFTC, AFTC, GND, POWER ON

X801 4.5M GW

INVERTER

32V ZENER

Q808 2SC1740SR BUFFER

Q810 2SC1740SR MUTE

Q805 2SA933S

Q801 2SC1740SR ACTIVE FILTER

Q802 2SC1740SR

IC802 UPC574J

IC804 PQ09RO5

9V POWER SUPPLY

REG.9V VOLTAGE ADJ.

IC803 M4066BP AFT SW

TUNER MICRO PROCESSOR

MEMORY (EP ROM)

Ø801 1SS133

Ø881 1SS133

SYNC. SEP.

REC +9V

REG +12V | 1A
REG +9V | 2A
AUDIO OUT | 3A
VIDEO OUT | 4A
EVER +5V | 5A

TO Y/CHROMA SECTION (1A) — (5A)

PIN404
1 EVER +5V
2 REG GNØ
3 REG GNØ
4 REG GNØ
5 REG +12V
6 REG +5V
7 UNREG +50V
8 NC

TO U POWER C.B-2 CN102

REG +5V | 6A
REG GNØ | 7A
TO Y/CHROMA SECTION (6A), (7A)

WS402
1 PON
2 TU SCK
3 TU SI
4 TU RST
5 TU CS
6 TU SO
7 A MUTE
8 REG GNØ

TO B SERVO/SYSCON WS207

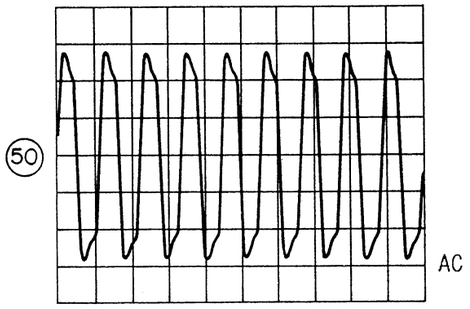
AUDIO MUTE | 8A
TO Y/CHROMA SECTION (8A)

WAVE FORMS NO.
MODEL HV-G501PF
MODEL HV-ØK510GPSKSE

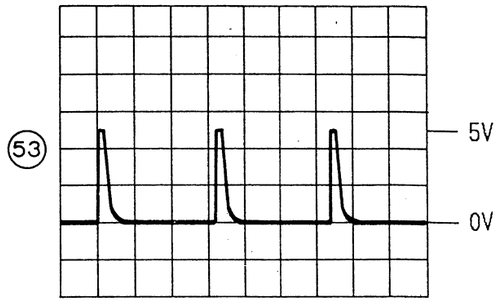
WAVE FORM－3

TUNER WAVE FORM

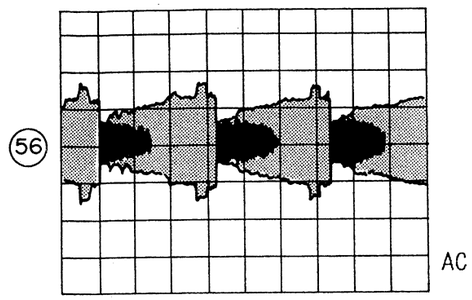
IC881 pin①
Oscillated by the microprocessor
1V/div.
200ns/div.



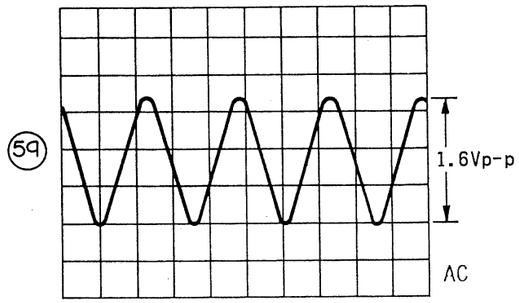
IC881 pin④
H. sync
2V/div.
20μs/div.



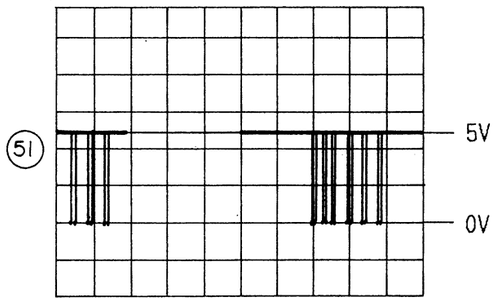
TU801 pin①
IF signal
P: Color bar signal
50ms/div.
20μs/div.



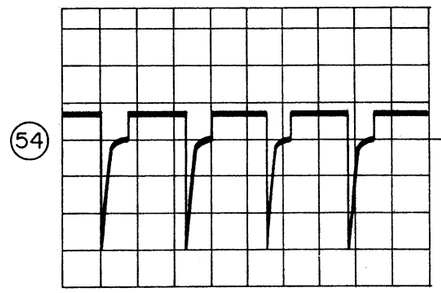
VIF801 pin ⑦
TU AUDIO OUT
When modulated
at 400Hz and 50kHz
500mV/div.
1ms/div.



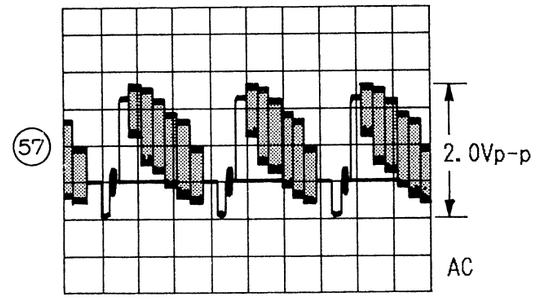
IC881 pin㉖
Clock of microprocessor
2V/div.
20ms/div.



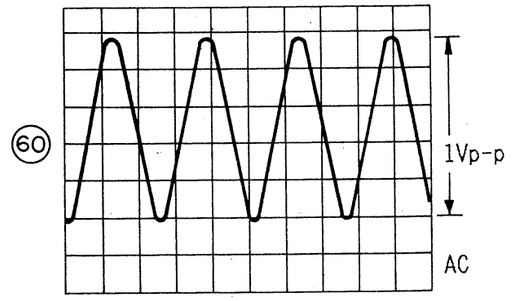
Q802 base
1V/div.
50μs/div.



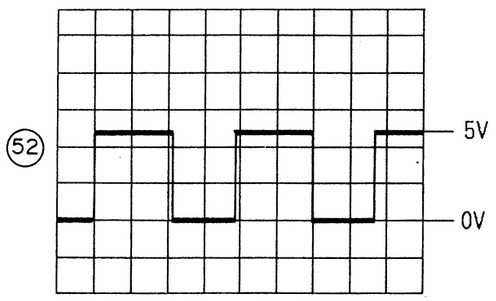
VIF801 pin②
500mV/div.
20μs/div.



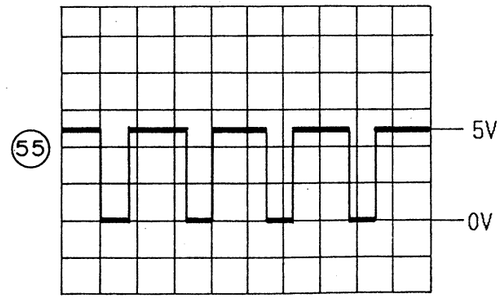
TP804
TU AUDIO OUT
When modulated
at 400Hz and 50kHz
200mV/div.
1ms/div.



IC881 pin⑬
Microprocessor chip select
2V/div.
20ms/div.



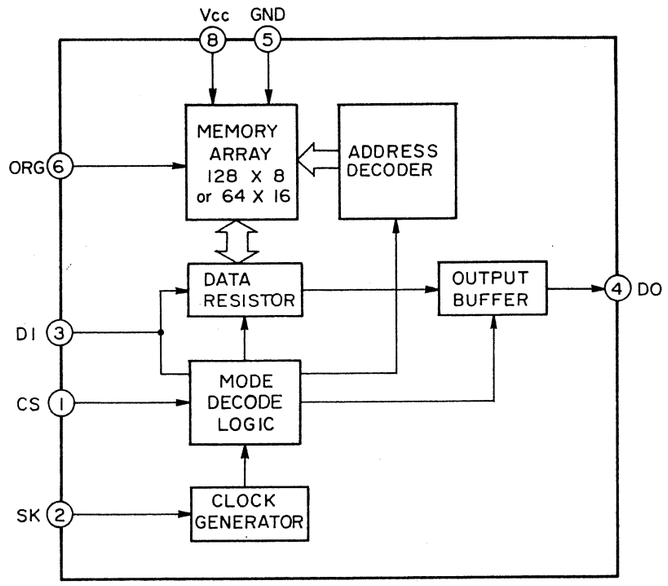
IC881 pin③
Pulse for generating a tuning voltage
The pulse width varies for different channels.
2V/div.
50μs/div.



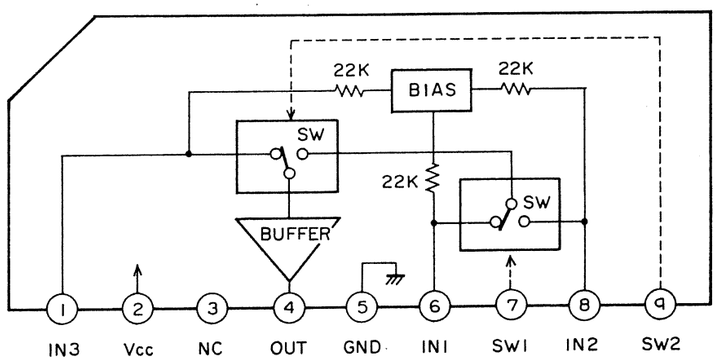
TP805
TU VIDEO OUT 75Ω TERMINATE
500mV/div.
20μs/div.

IC BLOCK DIAGRAM – 2

IC,MSM16811



IC,LVA522S

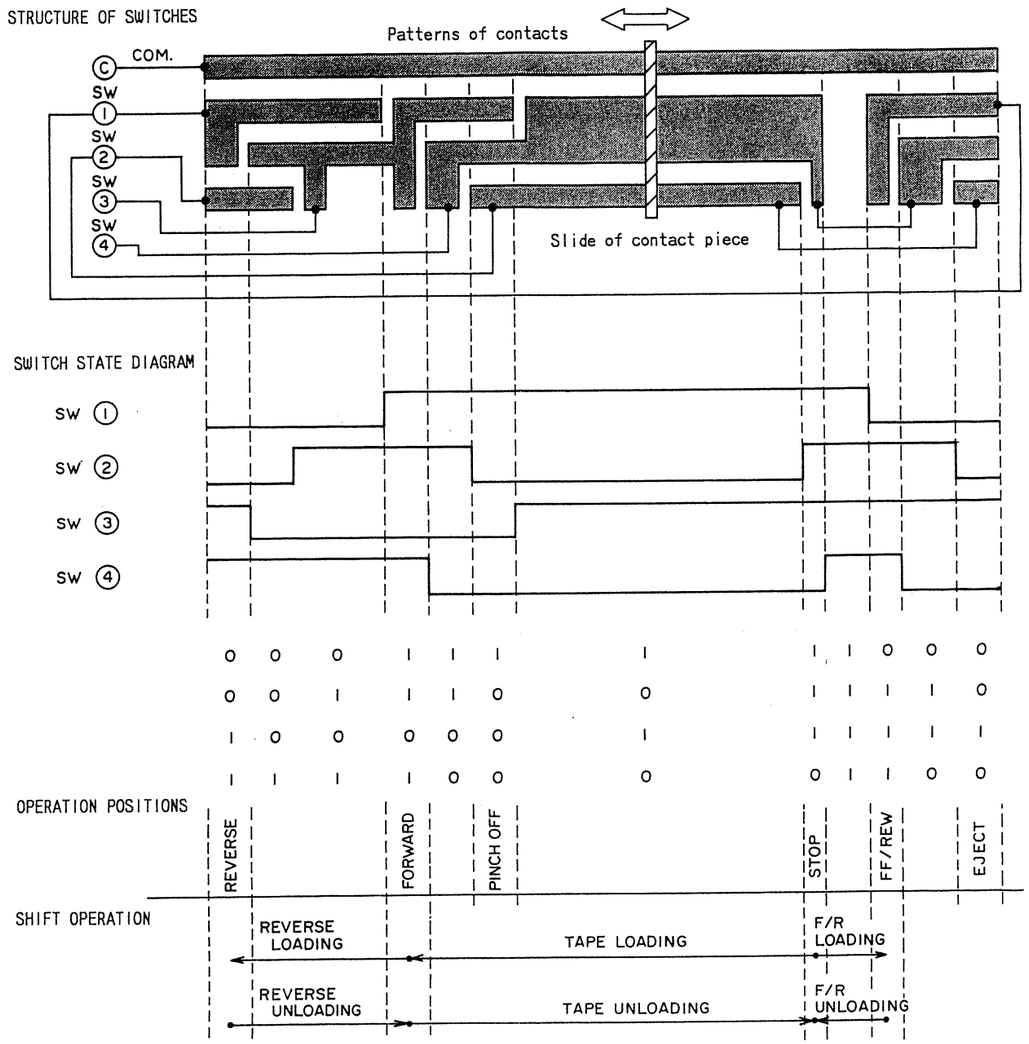


CONTROL INPUT
TRUTH TABLE

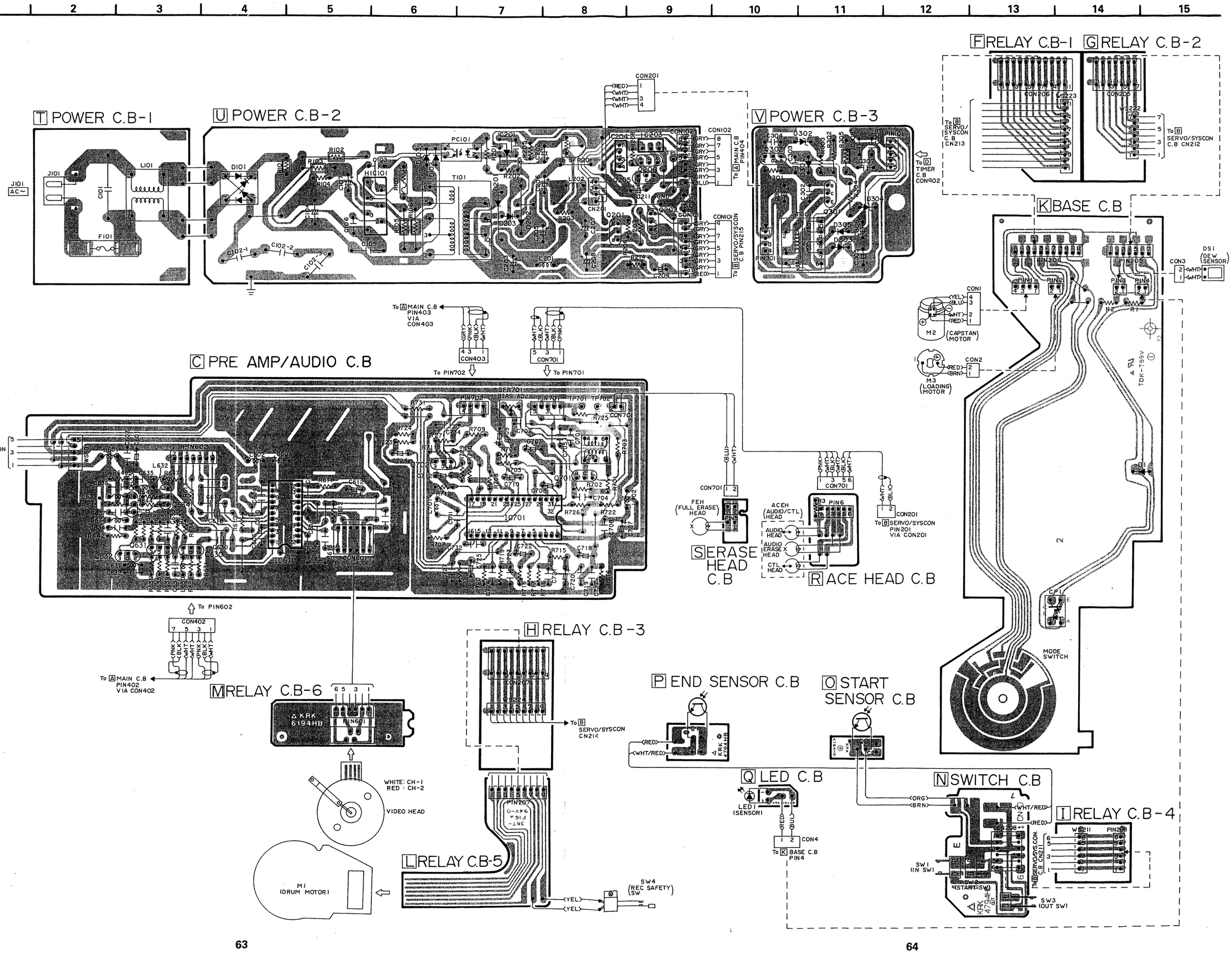
SW1	SW2	OUT
L	L	IN1
H	L	IN2
	H	IN3

SYSTEM SWITCH MODE

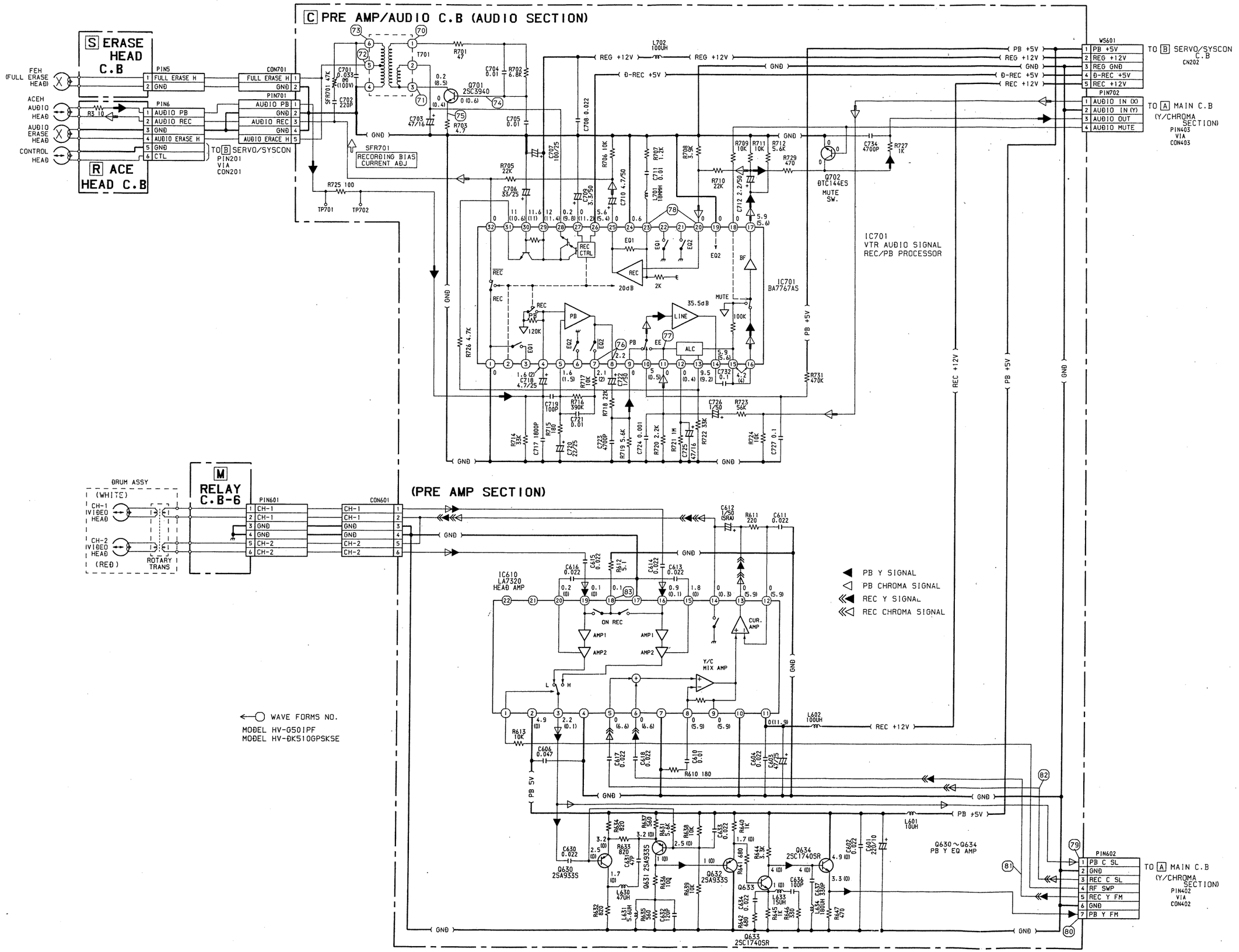
※When SYSTEM CONTROL IC has run away SYSTEM CONTROL IC will not accept any mode.

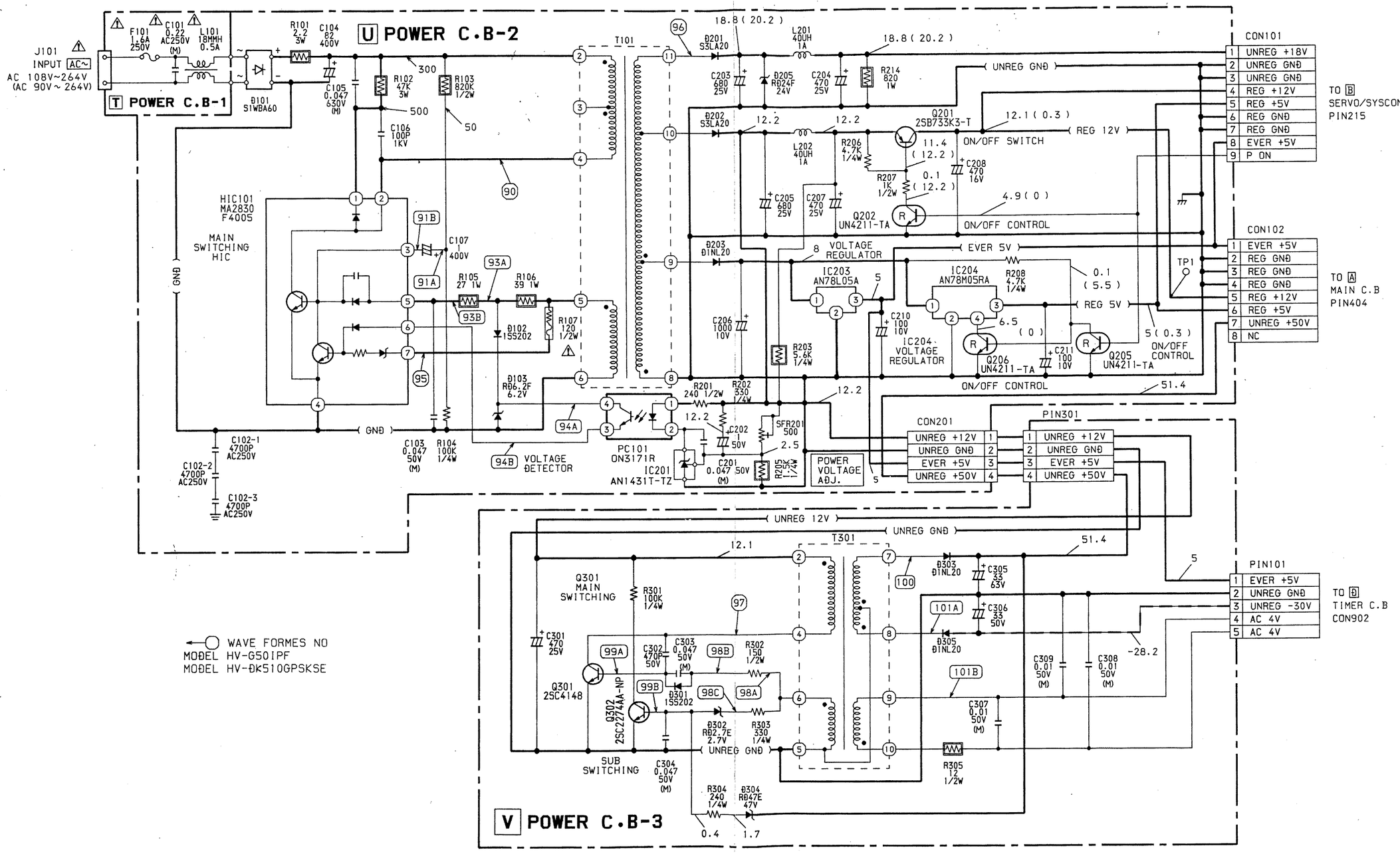


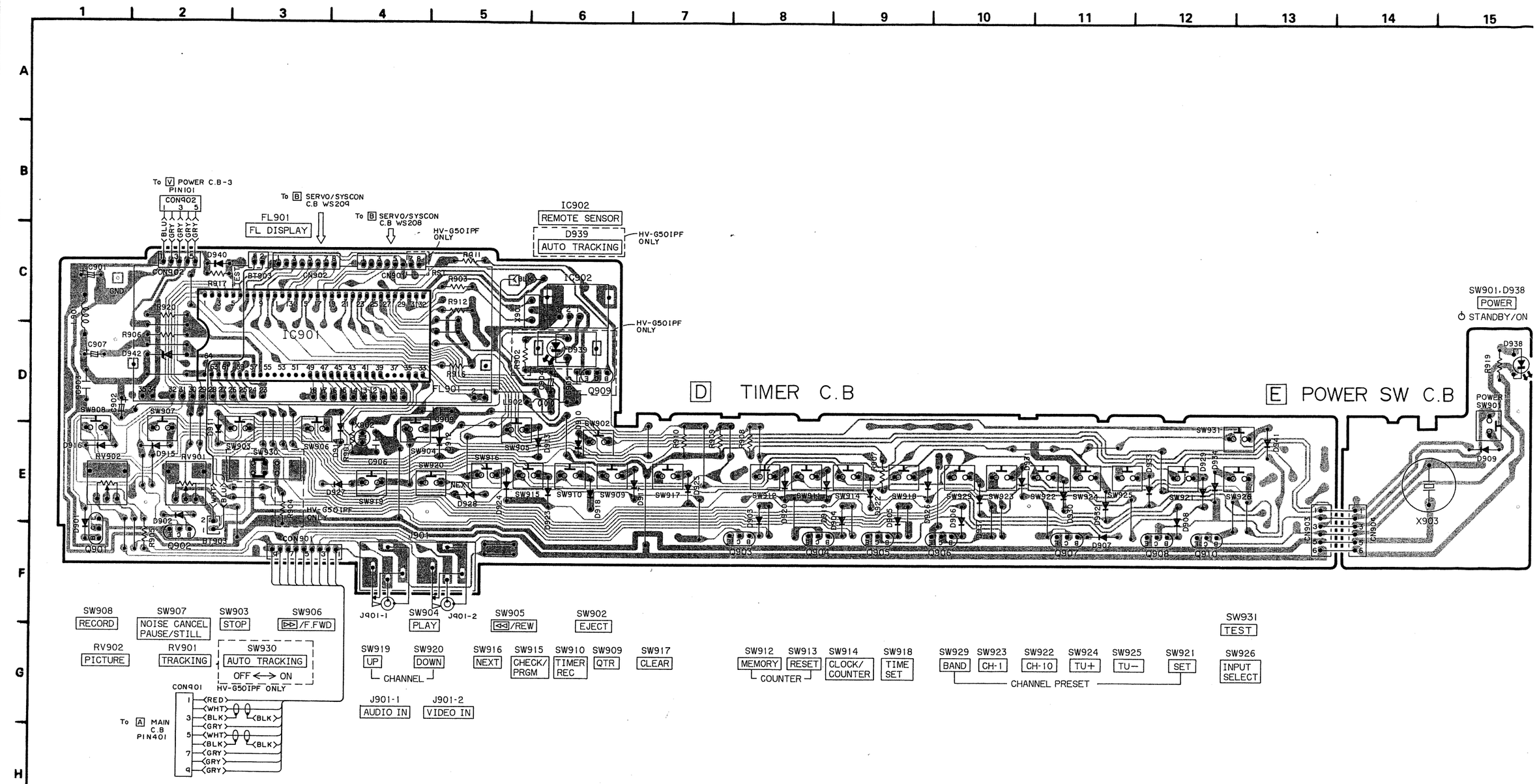
SWITCH				Position
SW1	SW2	SW3	SW4	
0	0	1	0	Front loading, Eject
0	1	1	0	Intermediate
0	1	1	1	F.F, REW
1	1	1	1	Intermediate
1	1	1	0	Stop
1	0	1	0	Tape loading
1	0	0	0	Gear change
1	1	0	0	Intermediate
1	1	0	1	Play (Pause)
0	1	0	1	Intermediate
0	0	0	1	Intermediate
0	0	1	1	Reset


T POWER C.B-1
U POWER C.B-2
V POWER C.B-3
F RELAY C.B-1
G RELAY C.B-2
K BASE C.B
C PRE AMP/AUDIO C.B
H RELAY C.B-3
M RELAY C.B-6
L RELAY C.B-5
P END SENSOR C.B
O START SENSOR C.B
Q LED C.B
N SWITCH C.B
I RELAY C.B-4
S ERASE HEAD C.B
R ACE HEAD C.B
M1 (DRUM MOTOR)
M2 (CAPSTAN MOTOR)
M3 (LOADING MOTOR)
MODE SWITCH
VIDEO HEAD
WHITE: CH-1
RED : CH-2
SW4 (REC SAFETY SW)
SW1 (IN SW)
SW2 (START SW)
SW3 (OUT SW)
To A MAIN C.B PIN403 VIA CON403
To A MAIN C.B PIN402 VIA CON402
To PIN702
To PIN701
To PIN602
To B SERVO/SYS CON C.B CN202
To B SERVO/SYSCON C.B CN214
To B SERVO/SYSCON C.B CN211
To B SERVO/SYSCON C.B CN213
To B SERVO/SYSCON C.B CN212
To A MAIN C.B PIN404
To B SERVO/SYSCON C.B PIN215
To D TIMER C.B CON902
To B SERVO/SYSCON PIN201 VIA CON201
To K BASE C.B PIN4
TDK-T59V

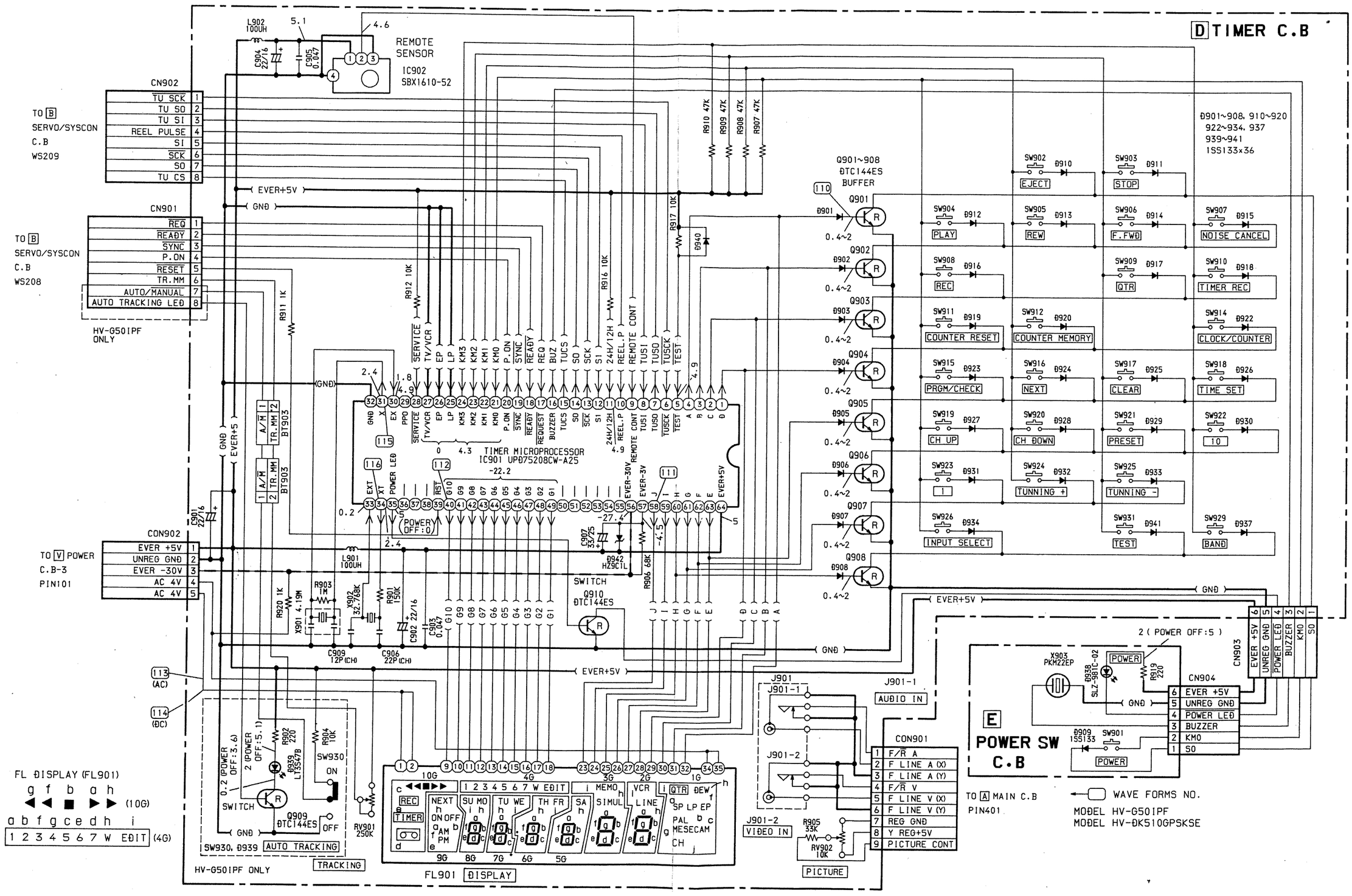
SCHEMATIC DIAGRAM — 4 (PRE AMP./ AUDIO/ POWER UNIT)




U POWER C.B-2
T POWER C.B-1
V POWER C.B-3
J101
INPUT AC~
AC 108V~264V
(AC 90V~264V)
F101 1.6A 250V
C101 0.22 AC250V (M)
L101 18MMH 0.5A
D101 S1WBA60
R101 2.2 3W
C104 82 400V
C105 0.047 630V (M)
R102 47K 3W
R103 820K 1/2W
300
500
50
C106 100P 1KV
90
HIC101 MA2830 F4005
MAIN SWITCHING HIC
GND
91B
91A
C107 1 400V
93A
93B
R105 27 1W
R106 39 1W
D102 1SS202
R107 120 1/2W
D103 RD6.2F 6.2V
95
94A
94B VOLTAGE DETECTOR
C102-1 4700P AC250V
C102-2 4700P AC250V
C102-3 4700P AC250V
C103 0.047 50V (M)
R104 100K 1/4W
PC101 ON3171R
IC201 AN1431T-TZ
R201 240 1/2W
R202 330 1/4W
C202 50V
SFR201 500
2.5
C201 0.047 50V (M)
R205 1.2K 1/4W
POWER VOLTAGE ADJ.
T101
96
D201 S3LA20
18.8 (20.2)
L201 40UH 1A
C203 680 25V
D205 RD24F 24V
C204 470 25V
R214 820 1W
UNREG GND
D202 S3LA20
12.2
L202 40UH 1A
R206 4.7K 1/4W
Q201 2SB733K3-T
12.1 (0.3)
REG 12V
11.4 (12.2)
ON/OFF SWITCH
C208 470 16V
R207 1K 1/2W
0.1 (12.2)
C205 680 25V
C207 470 25V
Q202 UN4211-TA
4.9 (0)
ON/OFF CONTROL
D203 D1NL20
8
VOLTAGE REGULATOR
EVER 5V
IC203 AN78L05A
IC204 AN78M05RA
R208 4.7K 1/4W
0.1 (5.5)
REG 5V
C206 1000 10V
C210 100 10V
IC204 VOLTAGE REGULATOR
6.5 (0)
5 (0.3)
ON/OFF CONTROL
Q206 UN4211-TA
C211 100 10V
Q205 UN4211-TA
ON/OFF CONTROL
51.4
TP1
CON101
1 UNREG +18V
2 UNREG GND
3 UNREG GND
4 REG +12V
5 REG +5V
6 REG GND
7 REG GND
8 EVER +5V
9 P ON
TO B
SERVO/SYSCON C.B
PIN215
CON102
1 EVER +5V
2 REG GND
3 REG GND
4 REG GND
5 REG +12V
6 REG +5V
7 UNREG +50V
8 NC
TO A
MAIN C.B
PIN404
CON201
UNREG +12V 1
UNREG GND 2
EVER +5V 3
UNREG +50V 4
PIN301
1 UNREG +12V
2 UNREG GND
3 EVER +5V
4 UNREG +50V
UNREG 12V
UNREG GND
T301
12.1
51.4
5
Q301 MAIN SWITCHING
R301 100K 1/4W
97
100
D303 D1NL20
C305 33 63V
C306 33 50V
101A
101B
D305 D1NL20
-28.2
C309 0.01 50V (M)
C308 0.01 50V (M)
C307 0.01 50V (M)
R305 12 1/2W
C301 470 25V
99A
99B
C302 470P 50V
C303 0.047 50V (M)
98B
98C
98A
R302 150 1/2W
Q301 2SC4148
Q302 2SC2274AA-NP
D301 1SS202
D302 RD2.7E 2.7V
R303 330 1/4W
UNREG GND
SUB SWITCHING
C304 0.047 50V (M)
R304 240 1/4W
D304 RD47E 47V
0.4
1.7
PIN101
1 EVER +5V
2 UNREG GND
3 UNREG -30V
4 AC 4V
5 AC 4V
TO D
TIMER C.B
CON902
WAVE FORMES NO
MODEL HV-G501PF
MODEL HV-DK510GPSKSE


To V POWER C.B-3 PIN101
CON902
BLU GRY GRY GRY GRY
To B SERVO/SYSCON C.B WS209
To B SERVO/SYSCON C.B WS208
FL901
FL DISPLAY
HV-G501PF ONLY
IC902
REMOTE SENSOR
D939
AUTO TRACKING
HV-G501PF ONLY
IC901
D TIMER C.B
E POWER SW C.B
SW901,D938
POWER
STANDBY/ON
X903
J901
CON901
HV-G501PF ONLY
SW908 RECORD
SW907 NOISE CANCEL PAUSE/STILL
SW903 STOP
SW906 ▷▷/F.FWD
SW904 PLAY
SW905 ◁◁/REW
SW902 EJECT
RV902 PICTURE
RV901 TRACKING
SW930 AUTO TRACKING OFF ⟷ ON
HV-G501PF ONLY
SW919 UP
SW920 DOWN
CHANNEL
SW916 NEXT
SW915 CHECK/ PRGM
SW910 TIMER REC
SW909 QTR
SW917 CLEAR
J901-1 AUDIO IN
J901-2 VIDEO IN
SW912 MEMORY
SW913 RESET
COUNTER
SW914 CLOCK/ COUNTER
SW918 TIME SET
SW929 BAND
SW923 CH-1
SW922 CH-10
SW924 TU+
SW925 TU—
SW921 SET
CHANNEL PRESET
SW931 TEST
SW926 INPUT SELECT
CON901
To A MAIN C.B PIN401
RED
WHT
BLK
GRY
WHT
BLK
GRY
GRY
GRY
BLK
BLK

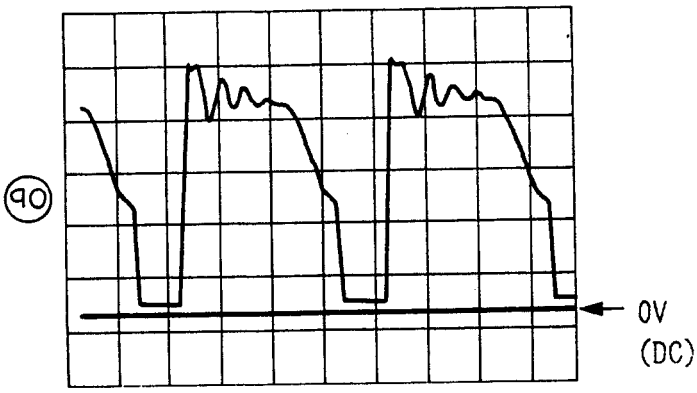
D TIMER C.B


L902 100UH
C904 22/16
C905 0.047
REMOTE SENSOR
IC902 SBX1610-52
CN902
TU SCK 1
TU SO 2
TU SI 3
REEL PULSE 4
SI 5
SCK 6
SO 7
TU CS 8
TO B SERVO/SYSCON C.B WS209
CN901
REQ 1
READY 2
SYNC 3
P.ON 4
RESET 5
TR.MM 6
AUTO/MANUAL 7
AUTO TRACKING LED 8
TO B SERVO/SYSCON C.B WS208
HV-G501PF ONLY
EVER+5V
GND
R910 47K
R909 47K
R908 47K
R907 47K
R917 10K
D940
R912 10K
R916 10K
R911 1K
SERVICE
TV/VCR
EP
LP
KM3
KM2
KM1
KM0
P.ON
SYNC
READY
REQ
BUZ
TUCS
SO
SCK
SI
24H/12H
REEL.P
REMOTE CONT
TUSI
TUSO
TUSCK
TEST
A
B
C
D
TIMER MICROPROCESSOR
IC901 UPD75208CW-A25
POWER LED
POWER OFF:0
R920 1K
X901 4.19M
R903 1M
X902 32.768K
R901 150K
C902 22/16
C903 0.047
C909 12P(CH)
C906 22P(CH)
C907 33/25
D942 HZ9CIL
SWITCH
Q910 DTC144ES
R906 68K
L901 100UH
CON902
EVER +5V 1
UNREG GND 2
EVER -30V 3
AC 4V 4
AC 4V 5
TO V POWER C.B-3 PIN101
113 (AC)
114 (DC)
C901 22/16
A/M
TR.MM
BT903
R902 220
R904 10K
SW930 ON
D939 LT3547B
Q909 DTC144ES
SWITCH
OFF
RV901 250K
SW930, D939 AUTO TRACKING
TRACKING
HV-G501PF ONLY
FL DISPLAY (FL901)
g f b a h
(10G)
a b f g c e d h i
1 2 3 4 5 6 7 W EDIT (4G)
FL901 DISPLAY
REC
TIMER
NEXT
ON OFF
AM PM
SU MO
TU WE
TH FR
SA
SIMUL
MEMO
VCR
LINE
QTR
DEW
SP LP EP
PAL
MESECAM
CH
Q901~908 DTC144ES BUFFER
D901~908, 910~920 922~934, 937 939~941 1SS133x36
Q901
Q902
Q903
Q904
Q905
Q906
Q907
Q908
SW902 D910 EJECT
SW903 D911 STOP
SW904 D912 PLAY
SW905 D913 REW
SW906 D914 F.FWD
SW907 D915 NOISE CANCEL
SW908 D916 REC
SW909 D917 QTR
SW910 D918 TIMER REC
SW911 D919 COUNTER RESET
SW912 D920 COUNTER MEMORY
SW914 D922 CLOCK/COUNTER
SW915 D923 PRGM/CHECK
SW916 D924 NEXT
SW917 D925 CLEAR
SW918 D926 TIME SET
SW919 D927 CH UP
SW920 D928 CH DOWN
SW921 D929 PRESET
SW922 D930 10
SW923 D931 1
SW924 D932 TUNNING +
SW925 D933 TUNNING -
SW926 D934 INPUT SELECT
SW931 D941 TEST
SW929 D937 BAND
J901
J901-1
AUDIO IN
J901-2
VIDEO IN
CON901
1 F/R A
2 F LINE A (X)
3 F LINE A (Y)
4 F/R V
5 F LINE V (X)
6 F LINE V (Y)
7 REG GND
8 Y REG+5V
9 PICTURE CONT
R905 33K
RV902 10K
PICTURE
2 (POWER OFF:5)
CN903
EVER +5V 6
UNREG GND 5
POWER LED 4
BUZZER 3
KM0 2
SO 1
X903 PKM22EP
D938 SLZ-9B1C-02
POWER
R919 220
CN904
EVER +5V 6
UNREG GND 5
POWER LED 4
BUZZER 3
KM0 2
SO 1
E
POWER SW C.B
D909 1SS133
SW901
POWER
TO A MAIN C.B PIN401
WAVE FORMS NO.
MODEL HV-G501PF
MODEL HV-DK510GPSKSE

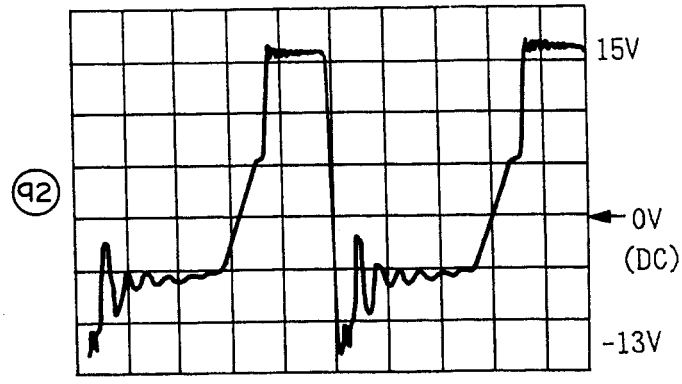
WAVE FORM－4

POWER UNIT WAVE FORM

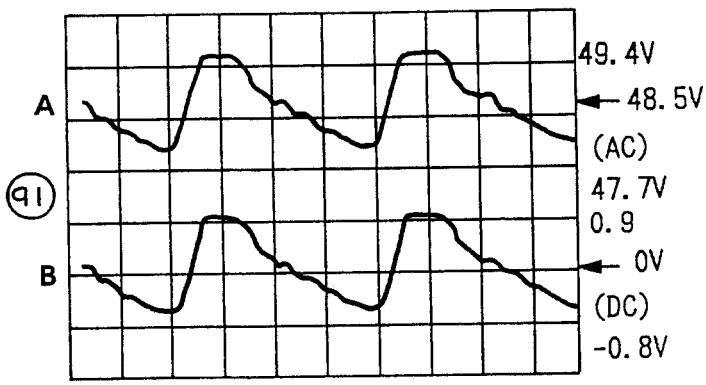
• HIC101 pin ② WAVE FORM
(T101 pin ④)
500Vp-p
200μs/div.



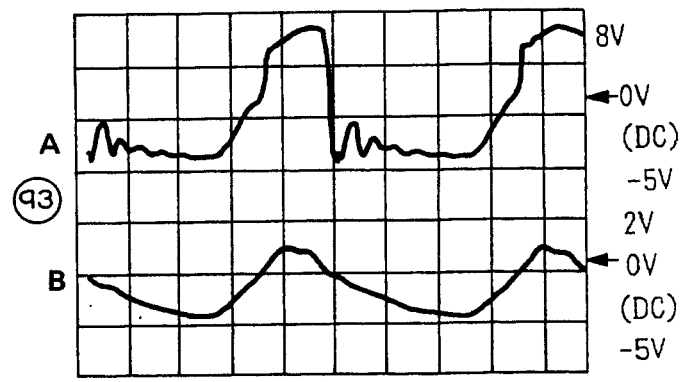
• T101 pin ⑤
5V/div.
2μs/div.



• C107 ⊕ SIDE (⑨1 -A)
1V/div.
2μs/div.
• C107 ⊖ SIDE (HIC101 pin ③)(⑨1 -B)
1V/div.
2μs/div.

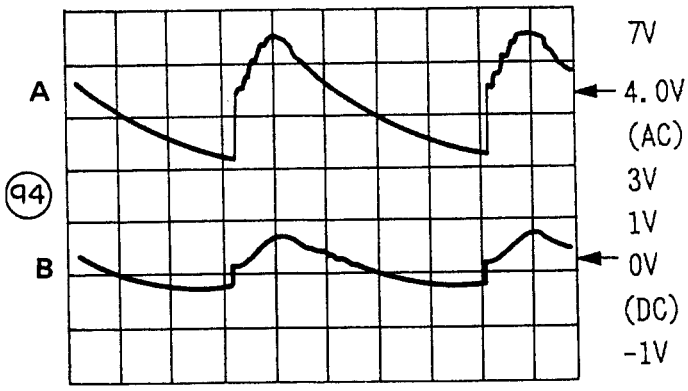


• D102 ANODE SIDE (⑨3 -A)
5V/div.
2μs/div.
• HIC101 pin ⑤ (⑨3 -B)
5V/div.
2μs/div.

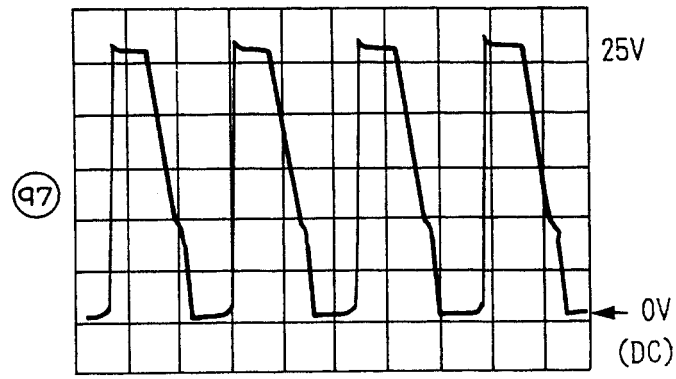


※ • When checking waveforms (90) - (95), connect the negative (-) terminal of C104 to ground (GND on primary side).
• When checking waveforms (96) and (101), connect pin 2 of CON101 to ground (GND on secondary side).
• Waveforms should be measured in the PB mode and with AC 220V power input.

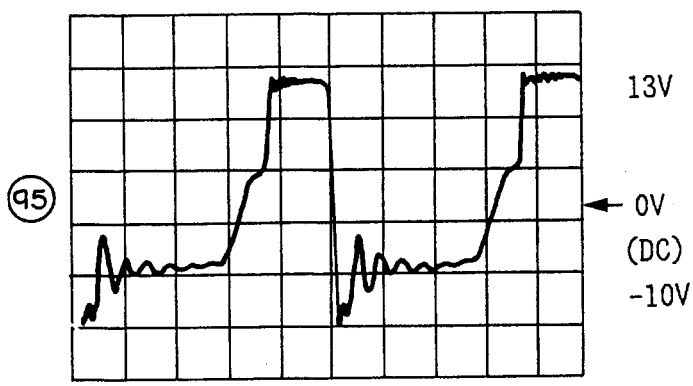
• D102 CATHOD SIDE (⑭ -A)
2V/div.
2μs/div.
• HIC101 pin ⑥ (⑭ -B)
2V/div.
2μs/div.



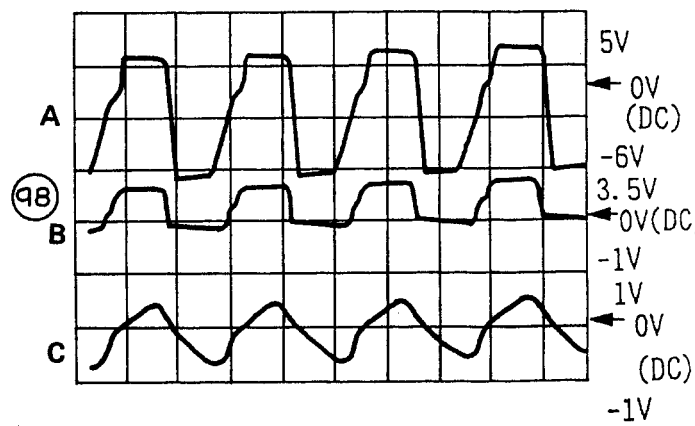
• Q301 COLLECTOR SIDE
5V/div.
2μs/div.



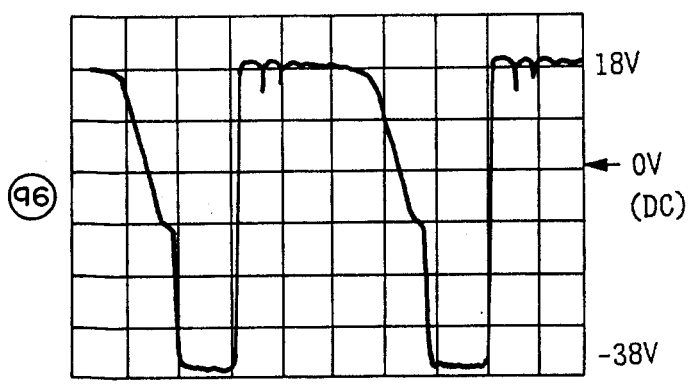
• HIC101 pin ⑦
5V/div.
2μs/div.



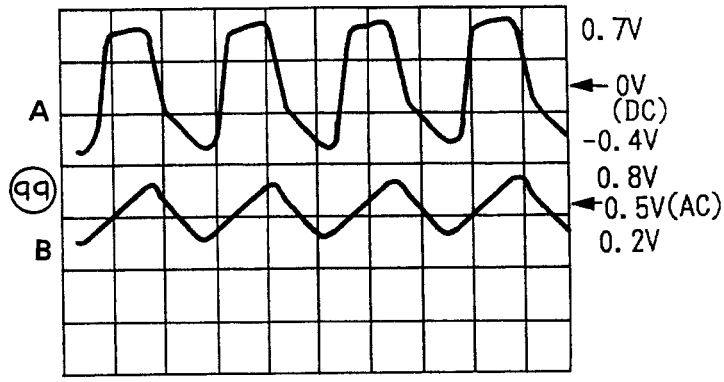
• T301 pin ⑥ (⑱ -A)
5V/div.
2μs/div.
• D302 CATHOD SIDE (⑱ -B)
5V/div.
2μs/div.
• D301 ANODE SIDE (⑱ -C)
2V/div.
2μs/div.



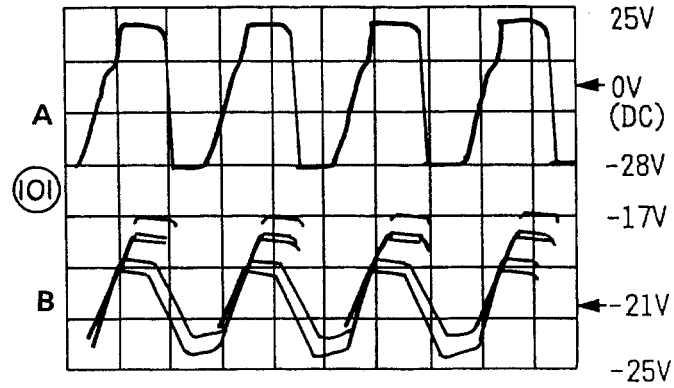
• T101 pin ⑪
10V/div.
2μs/div.



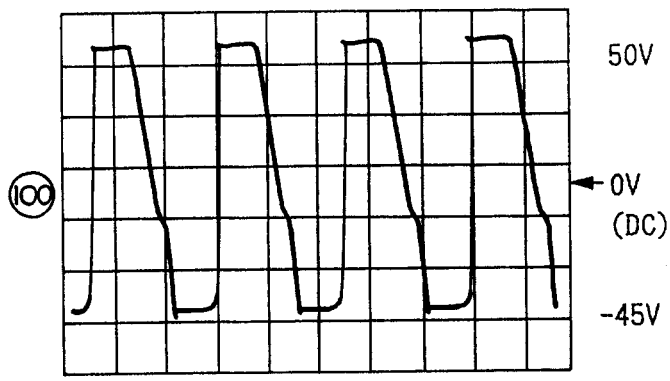
• Q301 BASE SIDE (⑨⑨ -A)
0.5V/div.
2μs/div.
• Q302 BASE SIDE (⑨⑨ -B)
0.5V/div.
2μs/div.



• T301 pin ⑧ (⑩① -A)
20V/div.
2μs/div.
• T301 pin ⑨ (⑩① -B)
2V/div.
2μs/div.

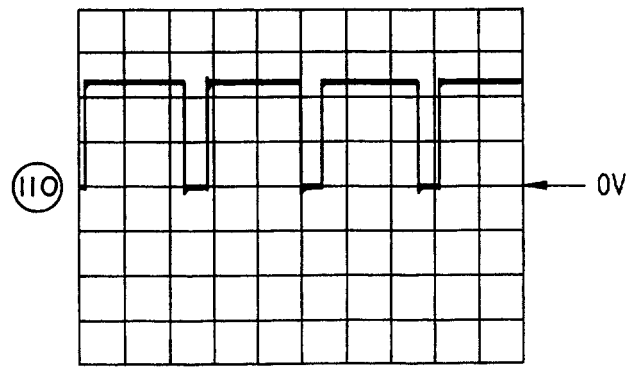


• D303 ANODE SIDE
20V/div.
2μs/div.

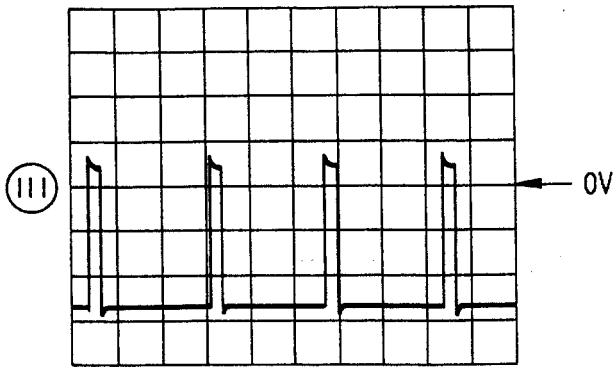


TIMER WAVE FORM

Q901 DTC144E Base
2ms/div.
2V/div.

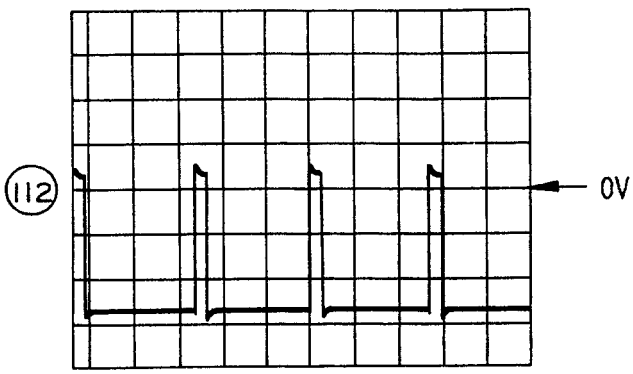


Anode voltage
IC901 pin (58) : S9
2ms/div.
10V/div.

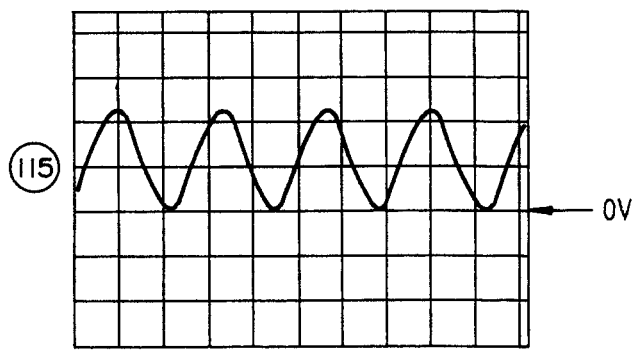


Filament voltage
CON902 pin (5) : AC 4V
DC range
2μs/div.
10V/div.

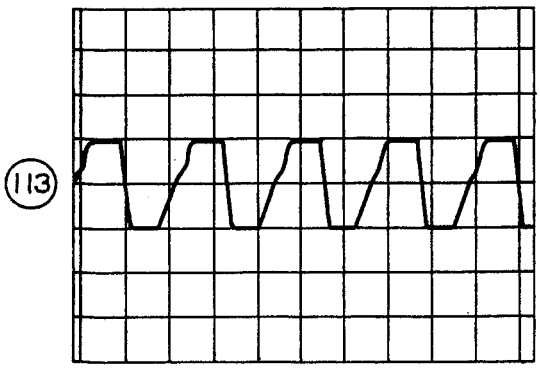
Grid voltage
IC901 pin (40) : T0
2ms/div.
10V/div.



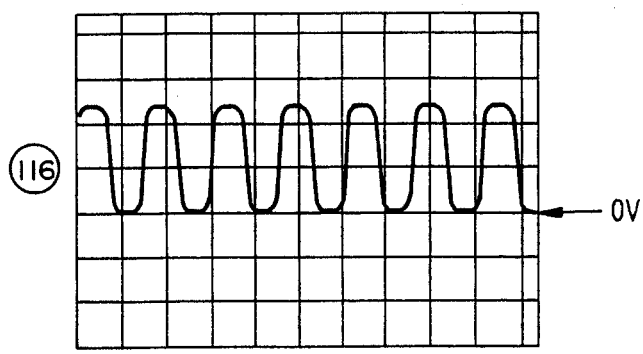
Main clock
IC901 pin (31) : X
4.19MHz
100ns/div.
2V/div.



Filament voltage
CON902 pin (5) : AC 4V
AC range
2μs/div.
5V/div.



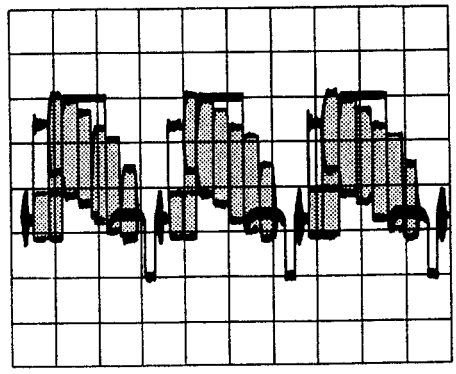
Sub-clock
IC901 pin (34) : XT
32.768kHz
20μs/div.
2V/div.



VIDEO WAVE FORM

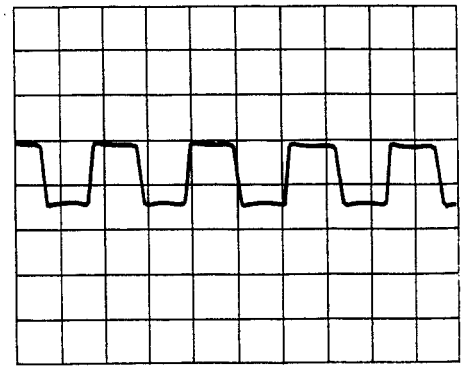
IC411 pin (21) (PB)
20μs/div.
500mV/div.
LINE OUT 75Ω TERMINATE

(1)



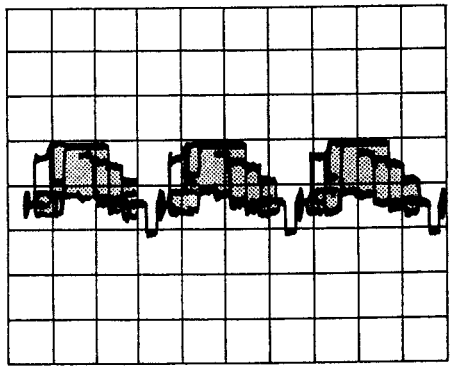
IC461 pin (18) (PB)
100ns/div.
500mV/div.

(4)



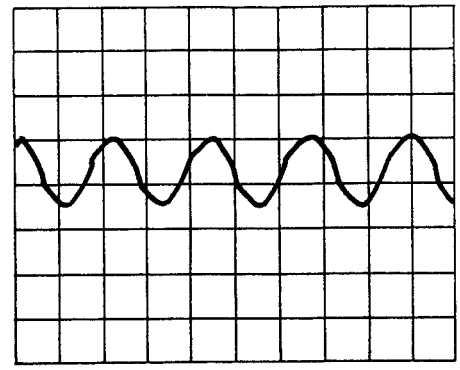
LINE OUT
20μs/div.
500mV/div.
LINE OUT 75Ω TERMINATE

(2)



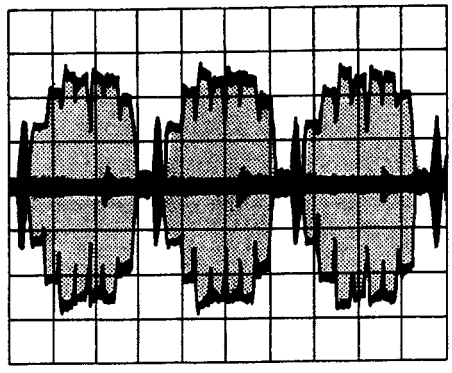
IC461 pin (19) (PB)
100ns/div.
500mV/div.

(5)



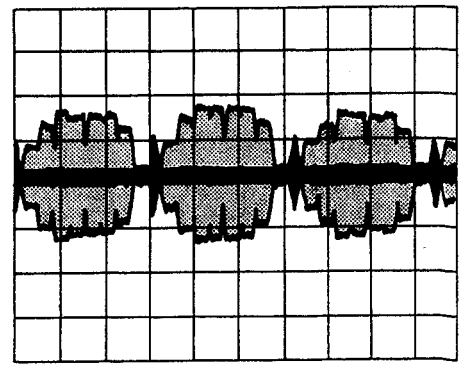
IC411 pin (19) (PB)
20μs/div.
100mV/div.

(3)



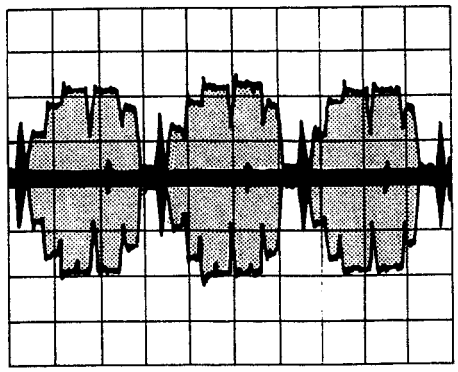
IC461 pin (5) (PB)
20μs/div.
500mV/div.

(6)



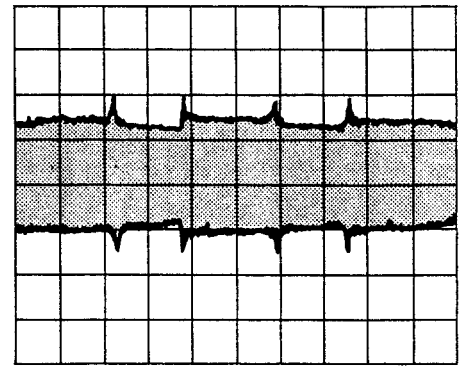
IC461 pin ③ (PB)
20μs/div.
50mV/div.

⑦



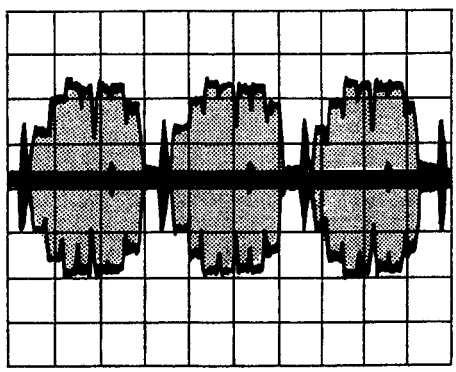
PIN402 pin ① (PB)
5ms/div.
100mV/div.

⑩



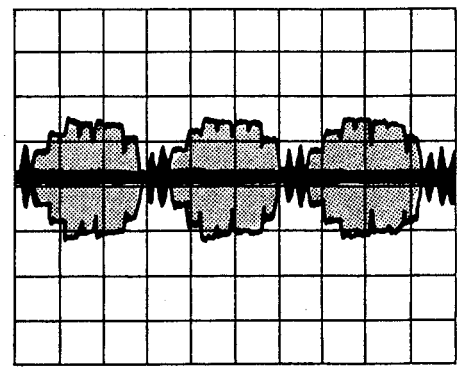
IC461 pin ㉔ (PB)
20μs/div.
50mV/div.

⑧



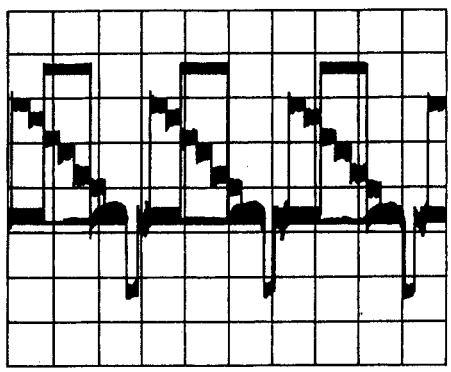
IC461 pin ⑦ (PB)
20μs/div.
100mV/div.

⑪



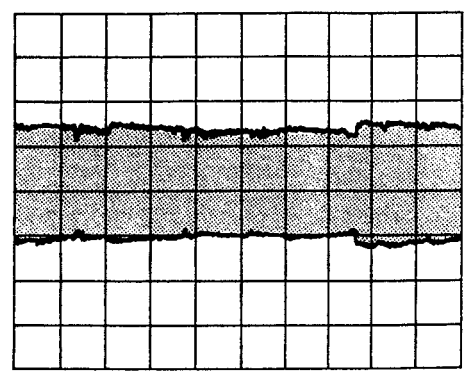
IC411 pin ⑨ (PB)
20μs/div.
100mV/div.

⑨



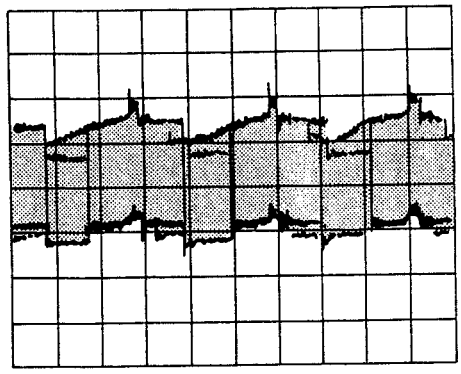
PIN402 pin ⑦ (PB)
5ms/div.
200mV/div.

⑫



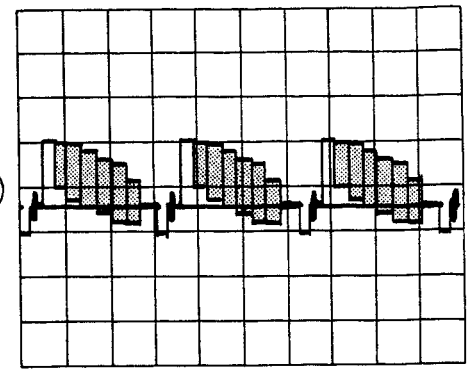
IC411 pin ⑦ (PB)
20µs/div.
500mV/div.

⑬



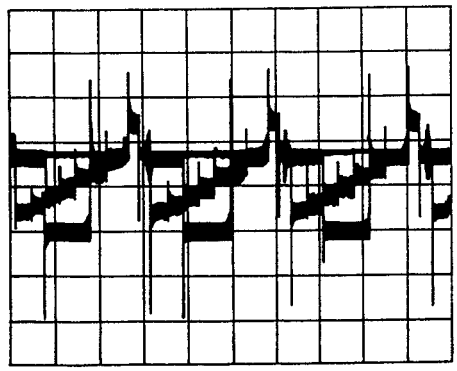
LINE OUT (EE)
20µs/div.
500mV/div.

⑯



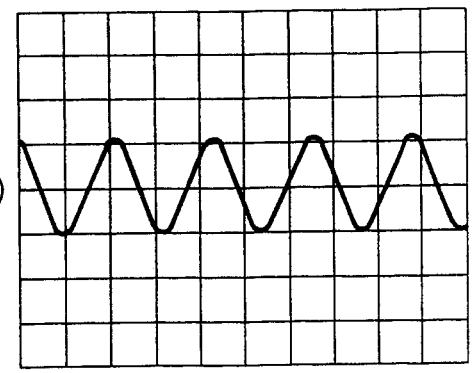
FIL411 OUT (PB)
20µs/div.
100mV/div.

⑭



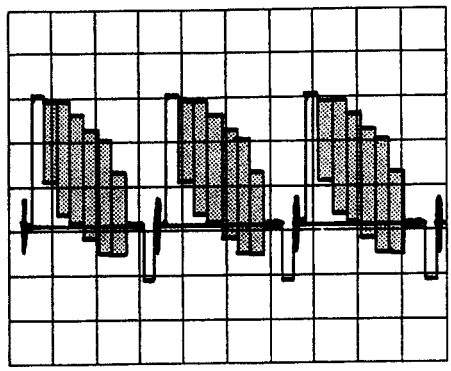
IC461 pin ⑲ (EE)
100ns/div.
500mV/div.

⑰



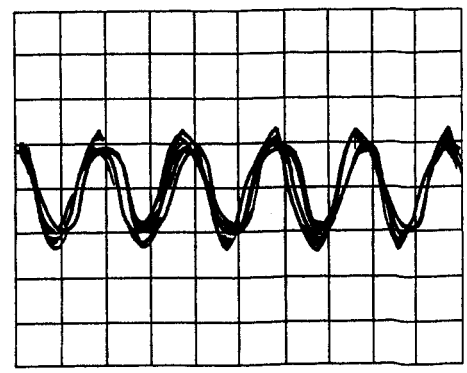
IC411 pin ㉑ (EE)
20ns/div.
500mV/div.

⑮



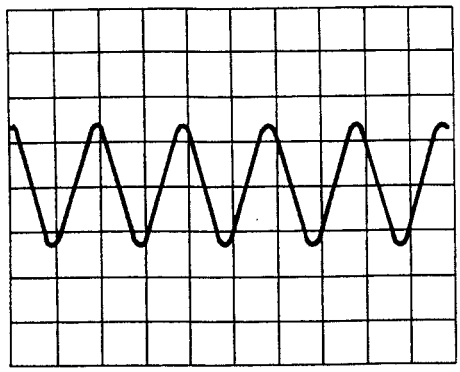
IC461 pin ⑬
100ns/div.
100mV/div.

⑱



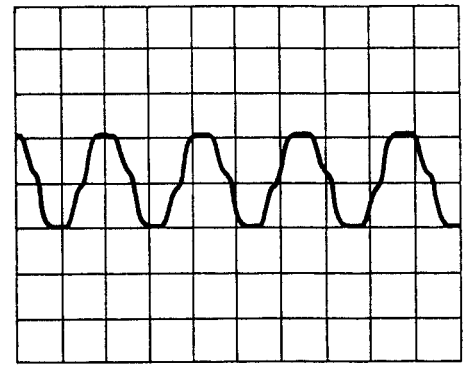
IC461 pin (11)
100ns/div.
100mV/div.

(19)



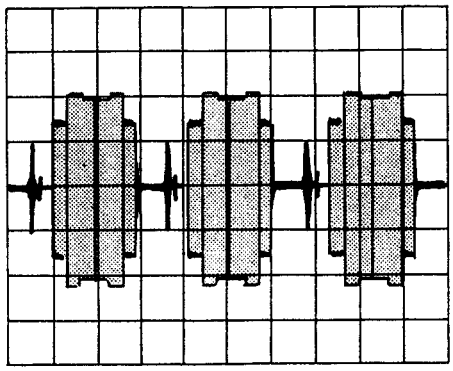
IC461 pin (18) (EE)
50mV/div.
100ns/div.

(22)



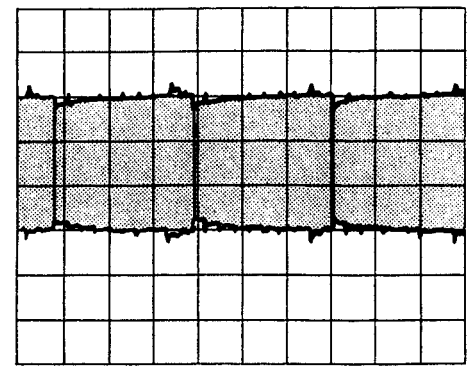
IC461 pin (9) (EE)
200mV/div.
20μs/div.

(20)



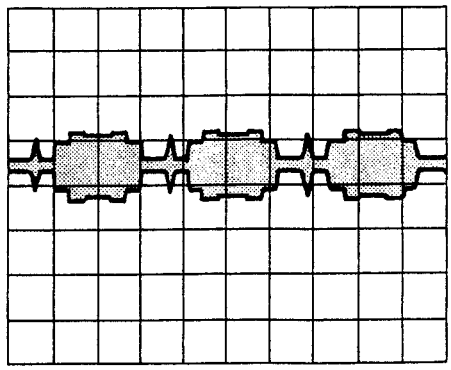
PIN402 pin (5) (EE)
100mV/div.
20μs/div.

(23)



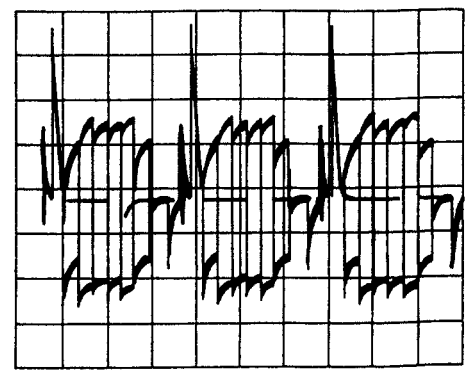
PIN402pin (3) (EE)
50mV/div.
20μs/div.

(21)



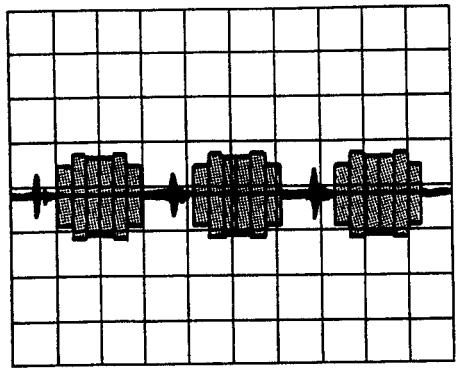
IC461 pin (5) (EE)
100mV/div.
20μs/div.

(24)



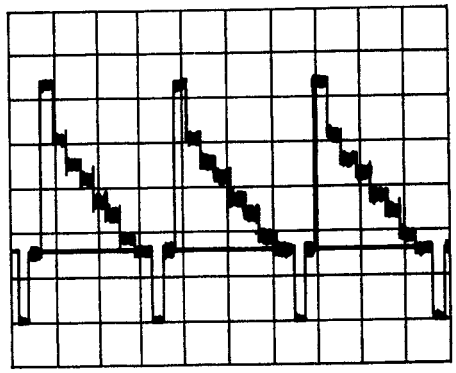
IC461 pin ③ (EE)
50mV/div.
20μs/div.

(25)



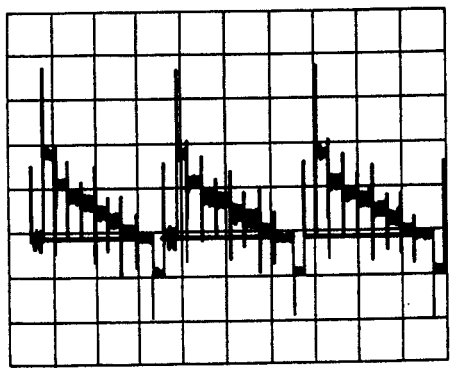
IC411 pin ⑥ (EE)
20μs/div.
100mV/div.

(26)



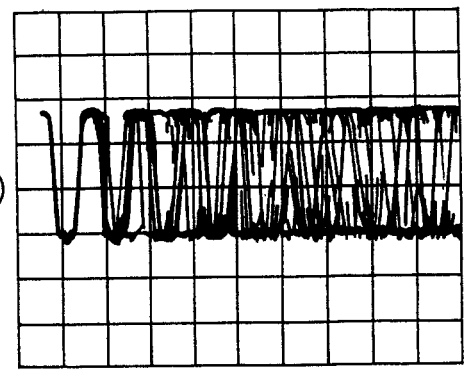
IC411 pin ② (EE)
20μs/div.
200mV/div.

(27)



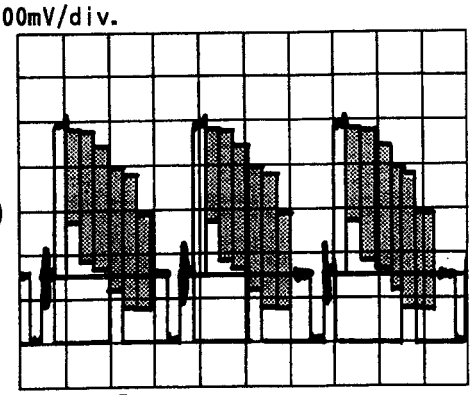
IC411 pin ㉚ (EE)
200ns/div.
500mV/div.

(28)



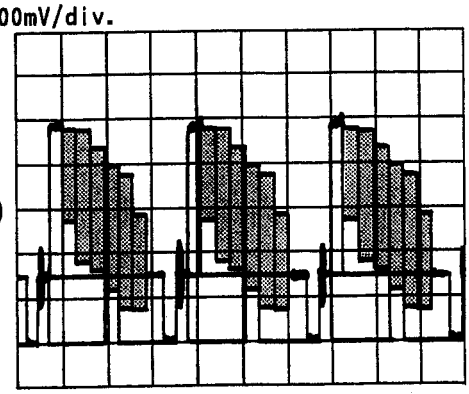
LINE IN (EE)
20μs/div.
200mV/div.

(29)



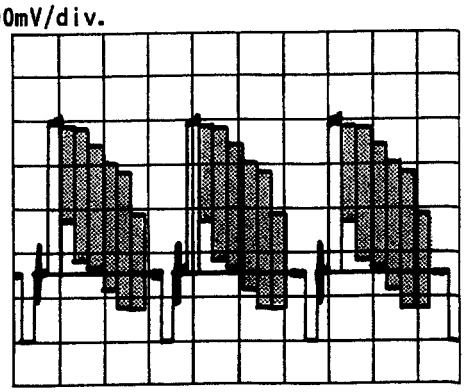
IC411 pin ㉔ (EE)
20μs/div.
200mV/div.

(30)



IC411 pin ⑦ (EE)
20μs/div.
200mV/div.

(31)



IC DESCRIPTION

IC, MB88525-205M (IC201)

Pin No.	Pin Name	I/O	Description	Active
1	TOP-SENSOR (START)	I	Receives the tape top (start) detection signal and A) Prevents the tape running in the reverse direction. B) Shifts the unit to the stop mode if this signal is input when the tape is running in reverse.	H
2	END-SENSOR	I	Receives the tape end detection signal and A) Prevents the tape running in the forward direction. B) Shifts the unit to the stop mode if this signal is input when the tape is running in forward.	H
3	RF-SWP	I	Receives drum rotation pulses. When pulses are not input for 2 seconds in a mode where the drum is rotating due to an abnormality in the tape or deck mechanism, the VCR enters the stop mode to protect the tape.	Pulse
4	REEL-SENSOR	I	Receives a signal from the reel sensor in the deck mechanism. When pulses are not input for 2 seconds in a mode where the reel is rotating due to an abnormality in the tape or deck mechanism, the VCR enters the stop mode to protect the tape.	Pulse
5	$\overline{\text{CASSETTE-OUT}}$	I	The CASSETTE OUT switch in the cassette loading mechanism is connected to detect the cassette-out state (eject). Instructs the cassette out operation (unloading) to stop.	L
6	$\overline{\text{CASSETTE-START}}$	I	The CASSETTE START switch in the cassette loading mechanism is connected to instruct the cassette-in operation (loading). When the input is detected during the cassette-out operation, the capstan motor is pulse driven.	L
7	$\overline{\text{CASSETTE-IN}}$	I	The cassette-in switch in the cassette loading mechanism is connected to detect the cassette-in state.	L
8	——	—	Unused (pulled up).	—
9	$\overline{\text{MODE SW 1}}$	I	These pins detect the position of the tape sledding mechanism.	L
10	$\overline{\text{MODE SW 2}}$	I		L
11	$\overline{\text{MODE SW 3}}$	I		L
12	$\overline{\text{MODE SW 4}}$	I		L
13	LP·EP-H	I	Tape speed detection inputs.	H
14	EP-H	I		H

	NTSC/PAL	LP·EP-H	EP-H
SP	2H/3H	L	L
LP	4H/3H	H	L
EP	6H/6H	H	H

15	MESECAM/$\overline{\text{PAL}}$	I	Video system discrimination inputs.	H or L
16	NTSC/$\overline{\text{PAL}}$	I		H or L

NTSC/$\overline{\text{PAL}}$	MESECAM/$\overline{\text{PAL}}$	MODE
H	※	NTSC
L	H	MESECAM
L	L	PAL

※ : DON'T CARE

17	——	—	Unused (pulled up).	—
18	——	—	Unused (pulled up).	—
19	$\overline{\text{DEW-SENSOR}}$ (fixed at "H")	I	Receives a signal from the dew sensor circuit and prevents mechanical operation in the high humidity state.	L
20	$\overline{\text{REC-PROOF}}$	I	Detects the presence/absence of the mis-erasure prevention tab. "H" : No tab "L" : Tab	L

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th><th>Active</th></tr>
<tr><td>21</td><td>——</td><td>–</td><td>Unused.</td><td>–</td></tr>
<tr><td>22</td><td>VCR/$\overline{TV}$</td><td>O</td><td>Switches the RF signal output of the VCR.
"H" : Built-in RF converter signal output
"L" : External antenna signal output</td><td>H or L</td></tr>
<tr><td>23</td><td>LINE/$\overline{TUNER}$
(AUDIO)</td><td>O</td><td>Switches the audio output.
"H" : Line input audio
"L" : Tuner audio</td><td>H or L</td></tr>
<tr><td>24</td><td>LINE/$\overline{TUNER}$
(VIDEO)</td><td>O</td><td>Switches the video output.
"H" : Line input video
"L" : Tuner video</td><td>H or L</td></tr>
<tr><td>25
26</td><td>EX
X</td><td>I
O</td><td>A ceramic oscillator which generates the system clock signal (6MHz) is connected to these pins.</td><td></td></tr>
<tr><td>27</td><td>$\overline{RST}$</td><td>I</td><td>System reset input.</td><td>L</td></tr>
<tr><td>28</td><td>——</td><td>–</td><td>Unused.</td><td>–</td></tr>
<tr><td>29</td><td>——</td><td>–</td><td>Unused (pulled up).</td><td>–</td></tr>
<tr><td>30</td><td>$\overline{SCK}$</td><td>I</td><td>Receives a pulse to time writing/reading of the serial data to/from the timer microprocessor.</td><td>Pulse</td></tr>
<tr><td>31</td><td>SI</td><td>I</td><td>Signal for receiving serial data from the timer microprocessor.</td><td>H or L</td></tr>
<tr><td>32</td><td>GND</td><td>–</td><td>GND.</td><td>–</td></tr>
<tr><td>33</td><td>SO</td><td>O</td><td>Signal to output serial data to the timer microprocessor.</td><td>H or L</td></tr>
<tr><td>34</td><td>$\overline{DRUM-ON}$</td><td>O</td><td>Drum motor rotation/stop control.</td><td>L</td></tr>
<tr><td>35</td><td>DELAYED-REC</td><td>O</td><td>Outputs "H" after the tape transport and the capstan speed are stabilized when the stop mode is switched to the record mode and the record pause mode is switched to the record mode, to instruct recording of a signal on the tape.</td><td>H</td></tr>
<tr><td>36</td><td>——</td><td>–</td><td>Unused.</td><td>–</td></tr>
<tr><td>37</td><td>A-MUTE</td><td>O</td><td>Mutes an audio signal.
A) Outputs "H" during trick play.
B) Outputs "H" for the specified period before and after the EE output is inverted to cut off the noise occurring when switching between the tape recording signal and EE signal (when the EE output is inverted).</td><td>H</td></tr>
<tr><td>38
39</td><td>CM-R
CM-F</td><td>O
O</td><td>Capstan motor rotation/stop and rotation direction control outputs.
<table>
<tr><th>CM-F</th><th>CM-R</th><th>State</th></tr>
<tr><td>L</td><td>L</td><td>Motor stopped</td></tr>
<tr><td>H</td><td>L</td><td>Rotates forward</td></tr>
<tr><td>L</td><td>H</td><td>Rotates in reverse</td></tr>
<tr><td>H</td><td>H</td><td>Braking stopped</td></tr>
</table></td><td>H
H</td></tr>
<tr><td>40
41</td><td>TLM-R
TLM-F</td><td>O
O</td><td>Tape sledding motor rotation/stop and rotation direction control outputs.
<table>
<tr><th>TLM-F</th><th>TLM-R</th><th>State</th></tr>
<tr><td>L</td><td>L</td><td>Motor stopped</td></tr>
<tr><td>H</td><td>L</td><td>Rotates forward</td></tr>
<tr><td>L</td><td>H</td><td>Rotates in reverse</td></tr>
<tr><td>H</td><td>H</td><td>Braking stopped</td></tr>
</table></td><td>H
H</td></tr>
</table>

Pin No.	Pin Name	I/O	Description	Active
42	CAPSTAN-SPEED·HOLD	O	Outputs "H" when the tape sledding motor moves among the REVERSE, PLAY and PINCH OFF positions accompanying the transition between PLAY and REVIEW from REC to REC PAUSE. Outputs "H" during STILL and PAUSE to hold the capstan speed so the capstan servo circuit can easily be returned to the play speed.	H
43	FF/REW	O	Outputs "H" during FF/REW, cassette-in and out operations and during unloading from PLAY to STOP. Controls the high-speed rotation of the capstan motor.	H
44	REV	O	Unused. Outputs "H" during REVIEW. Controls the review speed of the servo circuit.	H
45	CUE	O	Unused. Outputs "H" during CUE. Controls the cue speed of the servo circuit.	H
46	STILL-ADVANCE	O	Unused. Outputs "H" during STILL ADVANCE.	H
47	STILL/PAUSE	O	Unused. Outputs "H" during STILL, REC PAUSE and S-ADV.	H
48	PLAY	O	Unused. Outputs "H" during PLAY, STILL, CUE, REV and S-ADV.	H
49	REC	O	Unused. Outputs "H" during REC and REC PAUSE.	H
50	REW	O	Unused. Outputs "H" during REW and REV.	H
51	FF	O	Unused. Outputs "H" during FF and CUE.	H
52	——	—	Unused.	—
53	DELAYED-PLAY	O	Outputs "H" after the tape transport and capstan speed are stabilized when STOP is switched to PLAY and STOP is switched to STILL, to prevent picture distortion.	H
54	$\overline{\text{REQUEST}}$	O	Signal to request serial communications to the timer microprocessor.	L
55	$\overline{\text{READY}}$	O	Signal to inform the timer microprocessor that the standby for serial data reception is completed.	L
56	S·CLK	O	Outputs a pulse to time the writing of serial data to the servo IC.	Pulse
57	S·DAT	O	Signal to output serial data to the servo IC.	H or L
58	EE	O	Switches the video output between the external input signal and tape playback signal. "H" : External input signal "L" : Tape playback signal	H
59	——	—	Unused.	—
60	TRKG RST	O	Outputs a pulse of approx. 5ms when the POWER, EJECT or REC key is pressed to reset the tracking microprocessor.	H
61	JOG	O	Outputs "H" during CUE and REV.	H
62	$\overline{\text{SYNC}}$	I	Signal to synchronize serial communications with the timer microprocessor.	L
63	——	—	Unused.	—
64	EVER +5V	—	Positive power supply pin.	—

IC, μPD75208CW-A25 (IC901)

Pin No.	Pin Name	I/O	Description	Active
1	D	O	Anode and key matrix signals for the fluorescent display tube.	Pulse
2	C	O		
3	B	O		
4	A	O		
5	$\overline{\text{TEST}}$	I	Input for the test mode of the unit.	L
6	$\overline{\text{TUSCK}}$	I	Receives a pulse to time the writing/reading of serial data to/from the tuner microprocessor.	Pulse
7	TUSO	O	Signal to output serial data to the tuner microprocessor.	H or L
8	TUSI	I	Signal for receiving serial data from the tuner microprocessor.	H or L
9	$\overline{\text{REMOCON}}$	I	Remote control data input.	Pulse
10	REEL-PULSE	I	Receives a signal from the reel sensor in the deck mechanism. Receives reel pulses for the tape counter. When 4 pulses are input, the counter counts up by one step.	Pulse
11	24h/$\overline{\text{12h}}$	I	Switches the clock indication. "H" : 24 hours "L" : 12 hours AM/PM	H or L
12	SI	I	Signal to receive serial data from the mechanism microprocessor.	H or L
13	$\overline{\text{SCK}}$	O	Receives a pulse to time the writing/reading of serial data to/from the mechanism microprocessor.	Pulse
14	SO	O	Signal to output serial data to the mechanism microprocessor.	H or L
15	TUCS	O	Outputs a signal to request serial communications to the tuner microprocessor.	H
16	BUZZER	O	Output signal (approx. 2kHz) to drive the buzzer.	Pulse
17	$\overline{\text{REQUEST}}$	I	Receives a signal to request serial communications from the mechanism microprocessor.	L
18	$\overline{\text{READY}}$	I	Receives a signal from the mechanism microprocessor which signals that the standby for serial data reception is completed.	L
19	$\overline{\text{SYNC}}$	O	Signal to synchronize serial communications with the mechanism microprocessor.	L
20	P.ON	O	Controls the power supply circuit of the VCR. Power is turned on.	H
21	KM 0	I	Key matrix scan input.	Pulse
22	KM 1	I	Key matrix scan input.	Pulse
23	KM 2	I	Key matrix scan input.	Pulse
24	KM 3	I	Key matrix scan input.	Pulse
25	LP-H	I	Tape speed mode. Tape speed is LP.	H
26	EP-H	I	Tape speed mode. Tape speed is EP.	H
27	TV/VCR	I	Selects the indication in the fluorescent display of the VCR. "H" : Displays information. "L" : Does not display information.	H
28	$\overline{\text{SERVICE}}$	I	Input for the service mode of the VCR.	L
29	PPO	—	Unused.	—
30	EX	I	A ceramic oscillator which generates a main system clock pulse (4.19MHz) is connected.	
31	X	O		

Pin No.	Pin Name	I/O	Description	Active
32	GND	–	GND.	–
33	EXT	I	A crystal oscillator which generates a sub-system clock pulse (32.768KHz) is connected.	
34	XT	O		
35	POWER LED	O	Outputs "H" when power is turned on.	H
36	——	–	Unused.	–
37	——	–		–
38	——	–		–
39	$\overline{\text{RST}}$	I	System reset input.	L
40	G10	O	Grid signals of the fluorescent display tube.	Pulse
41	G9	O		Pulse
42	G8	O		Pulse
43	G7	O		Pulse
44	G6	O		Pulse
45	G5	O		Pulse
46	G4	O		Pulse
47	G3	O		Pulse
48	G2	O		Pulse
49	G1	O		Pulse
50	——	–	Unused.	–
51	——	–		–
52	——	–		–
53	——	–		–
54	——	–		–
55	——	–		–
56	EVER −30V	I	The pull-down resistors of the FIP controller/driver are connected.	
57	EVER −3V	I	Supplies power to the output buffer of the FIP controller/driver.	
58	J	O	Anode signals of the fluorescent display tube.	Pulse
59	I	O		Pulse
60	H	O	Anode and key matrix signals for the fluorescent display tube.	Pulse
61	G	O		
62	F	O		
63	E	O		
64	EVER +5V	–	Positive power supply.	–

IC, HD404302A06P (IC207)

Pin No.	Pin Name	I/O	Description
1	——	—	Unused (fixed at "H").
2	AUTO/$\overline{\text{MAN}}$	I	Auto tracking on/off signal ("H" in the AUTO Mode).
3	——	—	Unused (fixed at "H").
4	——	—	Unused (fixed at "L").
5	TR LED	O	Outputs pulses to make the LED flash during search in the auto tracking mode, and outputs "H" after auto tracking is completed.
6	TR MM	O	Outputs a delay timing pulse during auto tracking.
7	——	—	Unused.
8	C CONT 2	O	Outputs a noise feed pulse in the noise cancelling mode.
9	——	—	Unused.
10	$\overline{\text{TR CONT}}$	O	Outputs "L" during auto tracking to switch the TR MM circuit to the AUTO side.
11	$\overline{\text{D RST}}$	O	Outputs a reset pulse to detect the noise position in the noise cancelling mode.
12	——	—	Unused.
13	RF SW	I	RF SWP input.
14	——	—	Unused (fixed at "H").
15	CTL	I	CTL shaped wave form input.
16	——	—	Unused (fixed at "H").
17	——	—	Unused (fixed at "L").
18	——	—	Unused (fixed at "L").
19	M RF SW	I	RF SWP input.
20	DOC P	I	Noise position detection signal for the noise canceller.
21	GND	—	Power supply (GND).
22	A VCC	—	Power supply (+5V) of A/D converter.
23	V LEV	I	Input to detect the amplitude of the video signal during auto tracking (Analog DC).
24	——	—	Unused (fixed at "L").
25	——	—	Unused (fixed at "L").
26	——	—	Unused (fixed at "L").
27	A VSS	—	Power supply (GND) of A/D converter.
28	RESET	I	Reset input (goes "H" when reset).
29	——	—	Unused (fixed at "H").
30	EX	—	A clock generator is connected to these pins.
31	X	—	
32	VCC	—	Power supply (+5V).
33	——	—	Unused.
34	NTSC/$\overline{\text{PAL}}$	I	NTSC/PAL selection (fixed at "L").
35	——	—	Unused (fixed at "H").
36	——	—	Unused (fixed at "L").
37	JOG	I	"H" is input during CUE/REV.
38	PAUSE	I	Detects STILL ("H") and cancels noise.
39	MOD 1	I	These pins detect the tape speed mode.
40	MOD 0	I	
41	V PB	I	"H" is input during PLAY.
42	——	—	Unused.

IC, MN67481P (IC203)

Pin No.	Pin Name	I/O	Description
1	VDD	–	Power supply (+5V) of digital section.
2	TR MM	I	Tracking monostable multivibrator. Delay time constant for CTL locking position adjustment.
3	SDAT	I	Servo mode setting data input.
4	SCLK	I	Servo mode setting clock input.
5	RCLK	I	Reference timing clock for servo control (PAL : 4.433618MHz).
6	TEST	I	Unused (fixed at "L").
7	VLP	O	Artificial VD output (only durig CUE, REV and STILL).
8 9	MOD 0 MOD 1	O O	} Record mode output.
10	RF SW P	O	RF SW P output (PAL : 25Hz).
11	PWM 2	O	Drum servo phase error output.
12	PWM 1	O	Drum servo speed error output.
13	PWM 3	O	Capstan servo speed error output.
14	PWM 4	O	Capstan servo phase error output.
15	VSS	–	Power supply (GND) of digital section.
16	YPG	I	Drum PG amplifier input.
17	YFG	I	Drum FG amplifier input.
18	FGI	I	Capstan FG amplifier input.
19	RI	I	Sets the reference neutral point voltage (+2.5V) of the internal linear amplifier.
20	VRO	O	Reference voltage (set by pin 19) output.
21	CI	I	CTL clamp input.
22	CO	O	CTL amplifier output.
23	CTLG	–	CTL amplifier GND.
24	CTLA	I	Sets the CTL amplifier gain (negative input terminal).
25	CTLH	I	CTL input.
26	A VDD	–	Power supply (+5V) of analog section.
27	V SYN	I	Vertical sync signal input.
28	PG MM	I	Switching position monostable multivibrator. Delay time constant for head switching point adjustment.

	MODE 0	MODE 1
SP mode 3H	"L"	"L"
LP mode 3H	"H"	"L"
EP mode 6H	"H"	"H"

IC, μPD1730CT (IC881)

Pin No.	Pin Name	I/O	Description
1	OSC 1	I	4.5MHz ceramic oscillator input.
2	OSC 2	O	4.5MHz ceramic oscillator output.
3	PPO	O	D/A converter PWM output (tuning voltage).
4	CSYNC	I	H. sync pulse input (sync detection input).
5	AFT	I	AFT voltage input.
6	VDD	—	+5V power supply.
7	——	—	Unused.
8	AUS	I	Signal to select the destination, Australia.
9	CS	O	E^2PROM chip select.
10	EUSI	I	E^2PROM serial data input.
11	EUSO	O	E^2PROM serial data output.
12	TUSO	O	Serial data output (input to the tuner).
13	TUCS	I	Data transfer trigger.
14	GND	O	GND.
15	POWER ON	I	POWER key signal.
16	——	—	Unused.
17	$\overline{\text{AFTC}}$	O	AFT control.
18	AFTC	O	AFT control.
19	TUMU	O	Goes "H" when muting a singnal.
20	TUMTC	O	Goes "L" when H. sync pulse is detected.
21	——	—	Unused.
22	——	—	Unused.
23	GND	—	GND.
24	$\overline{\text{RESET}}$	I	Goes "H" at the program start.
25	TUSI	I	Serial data input (output from the tuner).
26	$\overline{\text{TUSCK}}$	O	Serial data clock.
27	$\overline{\text{ROMCLK}}$	O	E^2PROM clock.
28 29	BAND 1 BAND 2	O O	} These pins assign the tuner band.
30	——	—	Unused.

BAND	BAND1	BAND2
VH	1	0
VL	0	1
U	1	1

CIRCUIT DESCRIPTION

1. AUTO TRACKING

When the VCR is in a play mode other than the JOG (CUE/REV) and STILL modes, this function operates by turning AUTO TRACKING on (IC207 pin②: High).

[Function devices]

IC207, Q450, Q451, Q210, Q211, Q212 and peripheral capacitors and resistors.

[Principle]

The tracks are traced so that the CTL signal (which is delayed = TR MM) is servo-locked during play. However, the CTL heads have tolerances within the specification in different mechanisms, therefore, TR MM (tracking control) is adjusted with ordinary VCRs and the CTL signal is set to the optimum position.

The auto tracking function detects the level of the signals output from the video heads and sets the delay from the CTL signal so that the level is maximum.Auto tracking is performed through the following three processes.

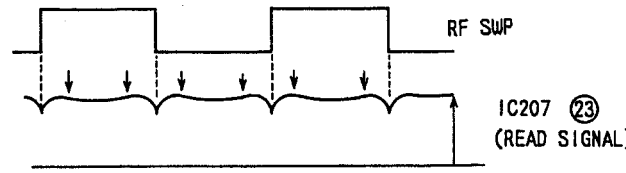
1. Search ... Detects the position where the level is maximum.
2. FIX ..... Fixes the delay so that the level is optimum.
3. Monitoring the change ... Detects whether or not the recording state was changed, and if a change is detected, searching re-started.

[Operation]

1. Search
   a. When a cassette is loaded and the VCR first enters the play mode.
   b. When the recording state was changed and the head output level changes (change of ±1/8 or more from the design value).
   c. When there are non-signal recorded sections and recorded sections due to a change of recording state.

   When the auto tracking circuit detects one of the following items, a, b and c, it performs searching and controls the delay from the CTL signal in steps so that the head output level is maximum.

Since the read levels vary as shown in the diagram below due to different rotation angles of the drum heads, the read timing is specified from RF SWP and the average read data is detected to improve reliability.



(↓ ····Sampling the read data)

2. Fixing

The delay is varied by the auto compulsory tracking MM (Q210, Q211, Q212) and the signal levels at each delay time are read. When the maximum level is detected, it is stored in memory and the delay is fixed.

The data of the tape with which search is completed is stored until ejection of power off is performed and the VCR enters the AUTO mode at the start of play without passing through search even when the stop mode is entered.

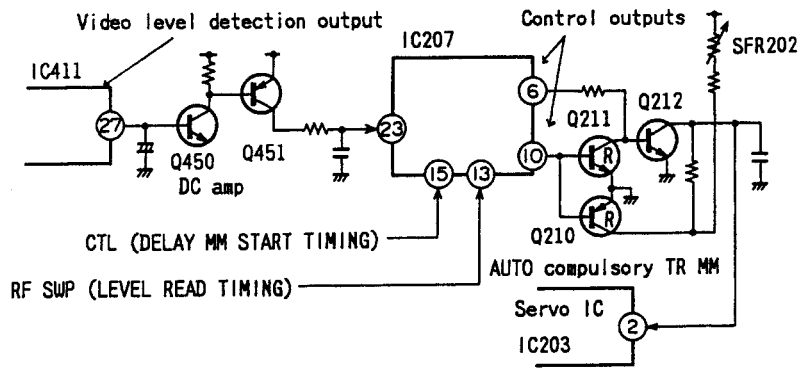
3. Monitoring of changes

The auto tracking circuit always monitors an abnormality even if the delay is fixed in the AUTO mode, and if any change occurs, it repeats search to adjust the tracking for the best.

(Note) The LED does not light in the following case even if the auto tracking switch is turned on.

When a tape with no signal recorded on it is played.

(presence/absence of CTL signal)



2. AUTO NOISE CANCELLER

When the STILL button is pressed during play, the auto noise canceller drives noise bars out of the screen so that they are not visible.

[Function devices]

IC207, IC209, Q213, Q214

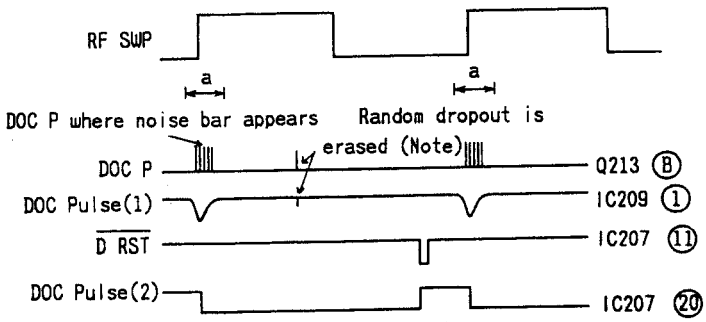
[Conditions]

IC207 determines whether the auto cancelling function should be operated or not and executes operation.

1. IC207 (41) High (PB)
2. IC207 (38) High (PAUSE)

[Principle]

The position of the noise bar can be known from the DOC P waveform in the video circuit. If the DOC P waveform is in area (a) of the RF SWP pulse as shown in the diagram below, the noise bar is not visible on the TV screen. The following DOC P pulse is produced so that IC207 (microprocessor) can read it easily.



1. When the trailing edge of the DOC P Pulse is within range (a) in the STILL mode, the cancelling operation is not necessary.
2. When it is out of range (a), the pulse which turn the capstan motor minutely are generated at pin 8 of IC207.
3. When the tape is fed minutely and the trailing edge of the DOC P pulse enters area (a), the generating of pulses is stopped.

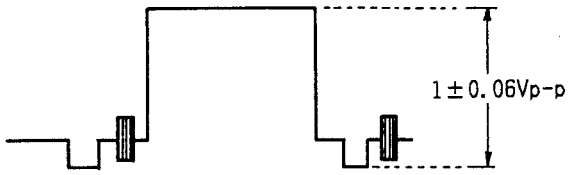
The DOC pulse moves to the right with reference to the RF SWP pulse in steps 2 and 3.

(Note) When tapes with large random dropouts are used, the random dropouts and DOC pulses cannot be discriminated and the unit performs the detection erroneously.

ELECTRICAL ADJUSTMENT

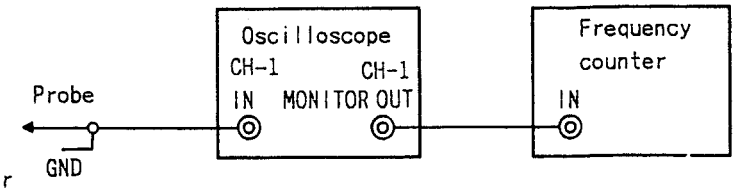
Preparation for adjustment

Input signal (100% white)

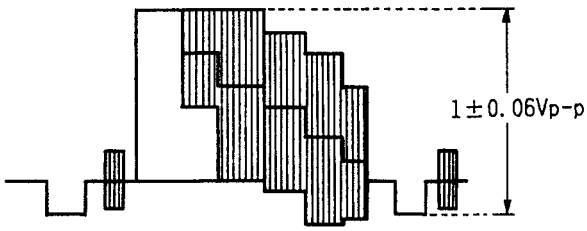


※Note : Voltage measured with a signal generator connected to the VCR

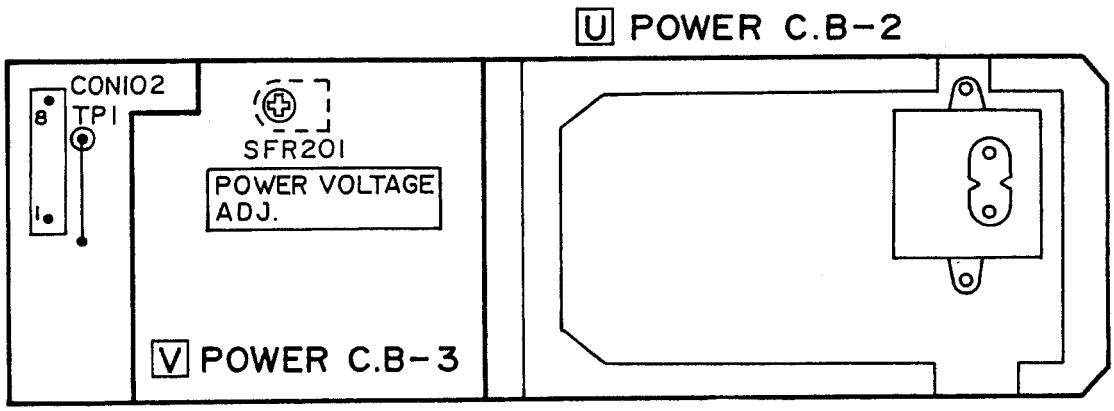
Connections of test equipment



Input signal (color bar)



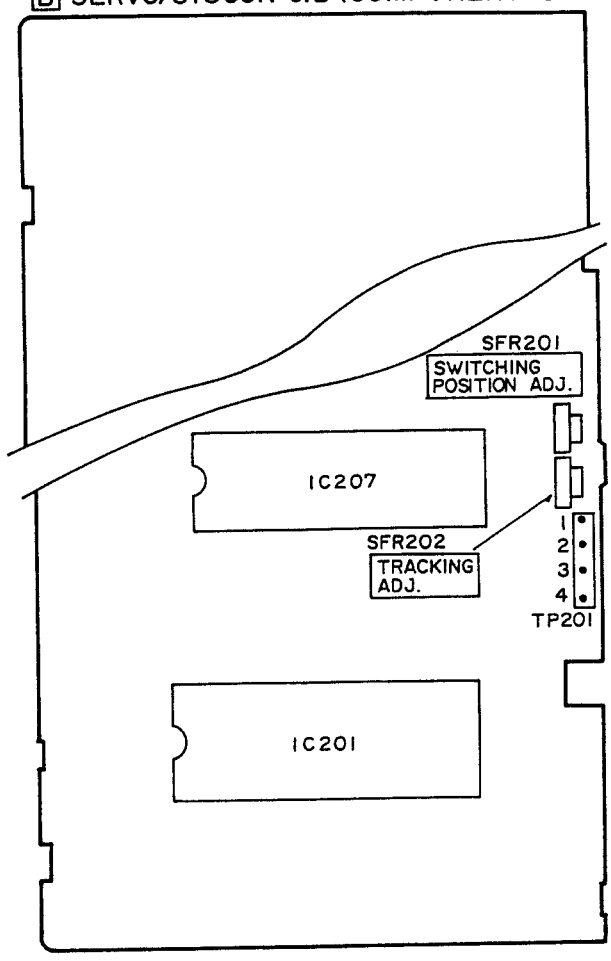
※Note : Voltage measured with a signal generator connected to the VCR



1.Power voltage adjustment (U POWER C.B-2)

1) Connect a digital tester between pin 5 (TP1) of CON102 on the main circuit board and ground.
2) Adjust SFR201 on the POWER C.B-2 so that the voltage is 12.2V±0.1V.

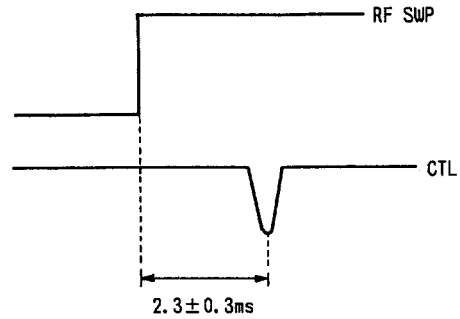
B SERVO/SYSCON C.B (COMPONENT SIDE)



2.Servo circuit adjustment

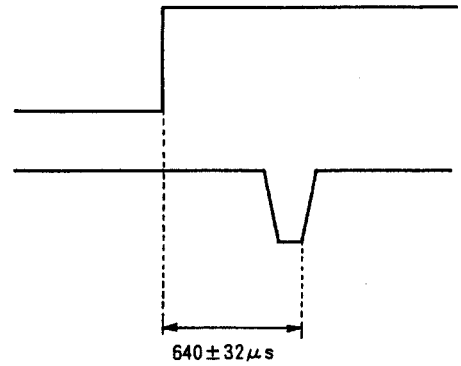
(1) Tracking Adjustment (B SERVO/SYSCON C.B)
Oscilloscope CH-1 : TP201 pin ② (RF SWP)
CH-2 : TP201 pin ① (CTL)

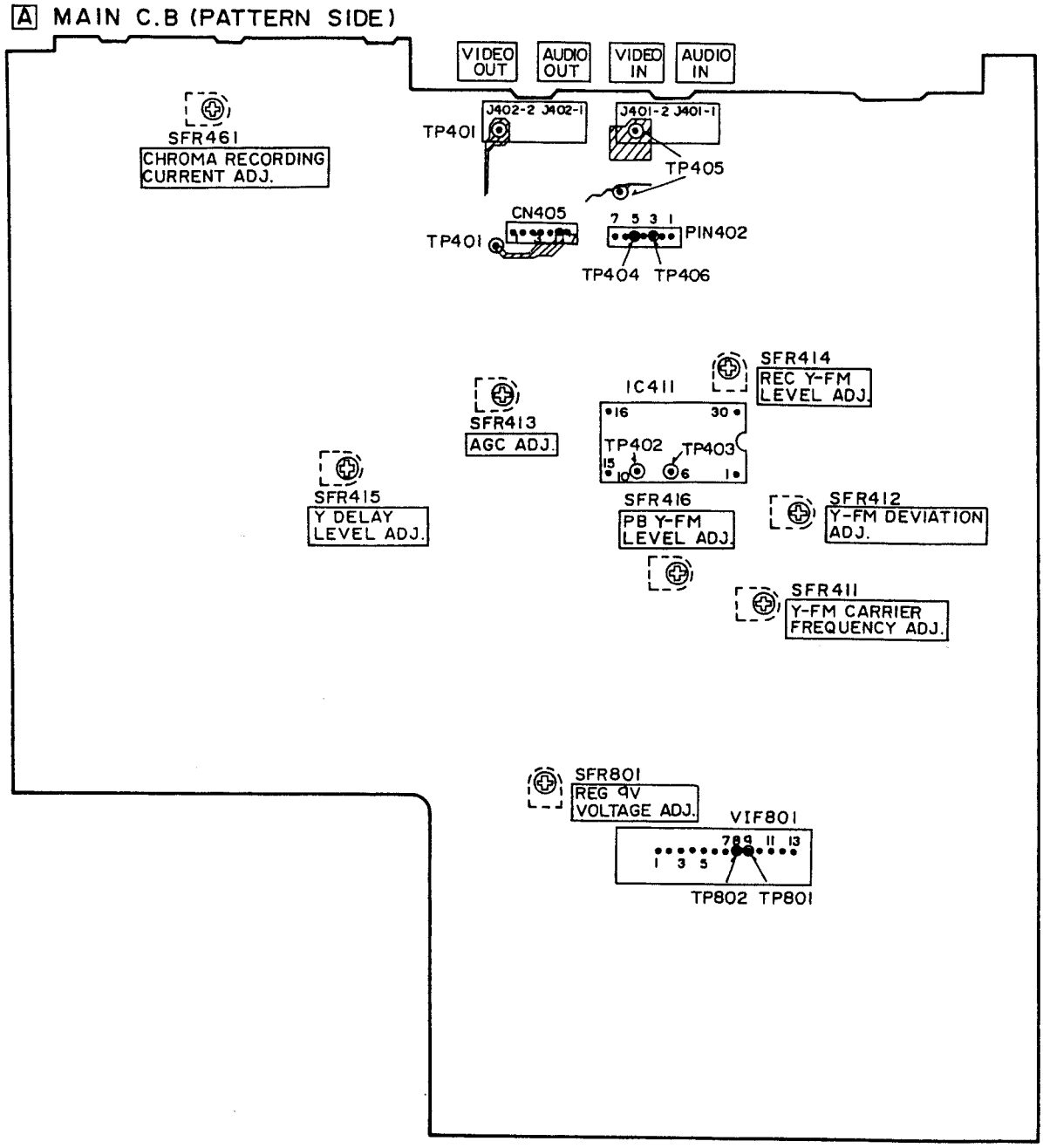
1) Set the VCR to the manual tracking mode.
2) Set RV901 (tracking VR) to the center position.
3) Play alignment tape TTV-P1.
4) Adjust SFR202 so that the position of the CTL signal is as shown in the figure below.



(2) Switching Position Adjustment (B SERVO/SYSCON C.B)
Oscilloscope CH-1 : TP201 pin ② (RF SWP)
CH-2 : TP201 pin ③ (V SYNC)

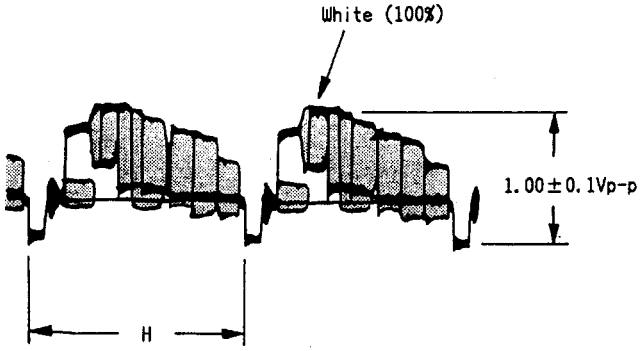
1) Set the VCR to the manual tracking mode.
2) Set RV901 (tracking VR) to the center position.
3) Play alignment tape TTV-P1.
4) Adjust SFR201 so that the V. SYNC signal is as shown in the figure below.



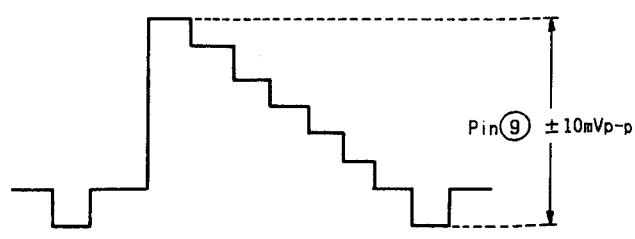


3.Video circuit adjustment

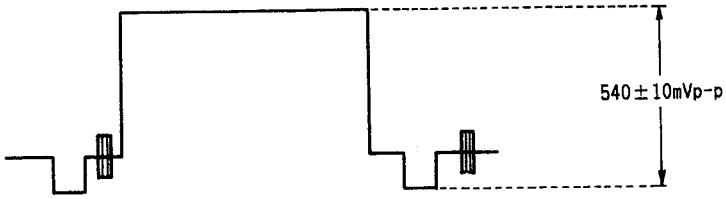
(1) PB Y-FM Level Adjustment (A MAIN C.B)
Oscilloscope : VIDEO OUT (TP401)
1) Play alignment tape TTV-P1.
2) Adjust SFR416 so that the white 100% level is as shown in the figure below.
※Terminate the VIDEO OUT jack with 75ohms or connect a monitor to it.



(2) Y Delay Level Adjustment (A MAIN C.B)
Oscilloscope : IC411 pin ⑩ (TP402)
1) Play alignment tape TTV-P1.
2) Adjust SFR415 so that the level at pin ⑩ of IC411 is the same as that of the waveform at pin ⑨ of IC411.

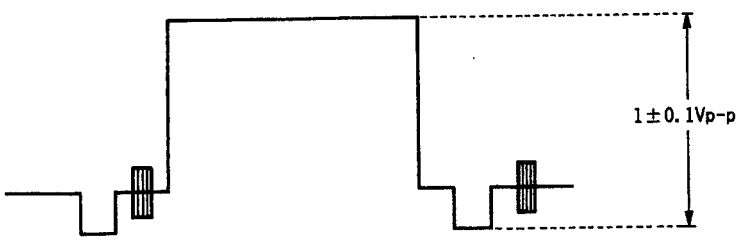


(3) AGC Adjustment ([A] MAIN C.B)
Oscilloscope : IC411 pin ⑥ (TP403)
1) Switch the input selector to LINE.
2) Apply a 100% white signal to the VIDEO IN jack.
3) Adjust SFR413 so that the Y signal is as shown in the figure below in the E-E mode.

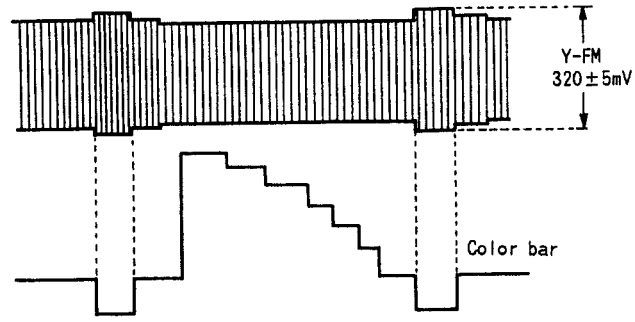


(4) Y-FM Carrier Frequency Adjustment ([A] MAIN C.B)
Oscilloscope : PIN402 pin ⑤ (TP404)
1) Switch the input selector to LINE.
2) Set the VCR to the no signal input state (with no input connected to the VIDEO IN jack).
3) Set the VCR to the E-E mode.
4) Adjust SFR411 so that the frequency counter reads 3.8MHz±0.05MHz.

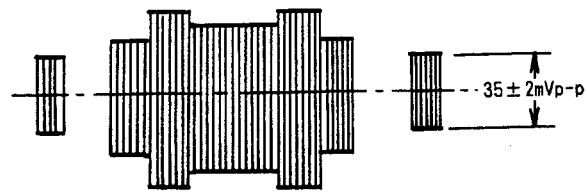
(5) Y-FM Deviation Adjustment ([A] MAIN C.B)
※The Y FM carrier frequency adjustment should have been completed.
Oscilloscope : VIDEO OUT (TP401)
1) Switch the input selector to LINE.
2) Record a 100% white signal.
3) Play the recorded section and check the Y signal level.
4) IF out of specification turn SFR412.
5) Repeat 2)~4) until observe the waveform as indicated below.
※Terminate the VIDEO OUT jack with 75ohms or connect a monitor to it.



(6) REC Y-FM Level Adjustment ([A] MAIN C.B)
Oscilloscope CH-1 : PIN402 pin ⑤ (TP404)
CH-2 : VIDEO IN (TP405)
1) Switch the input selector to LINE.
2) Apply a color bar signal or 100% white signal to the VIDEO IN jack.
3) Adjust SFR414 so that the synchro signal level of the Y FM level is as shown in the figure below in the E-E mode.

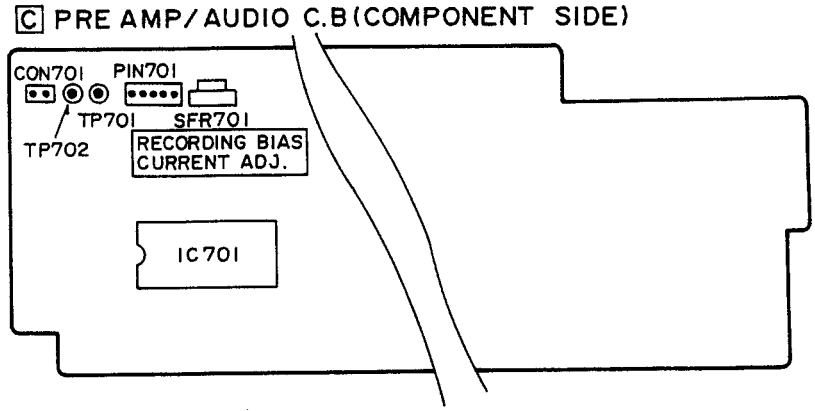


(7) Chroma Recording Current Adjustment ([A] MAIN C.B)
Oscilloscope : PIN402 pin ③ (TP406)
1) Switch the input selector to LINE.
2) Apply a color bar signal to the VIDEO IN jack.
3) Set the VCR the record mode and adjsut SFR461 so that the burst level is as shown in the figure below.



4.Tuner section adjustment

(1) REG 9V Voltage Adjustment ([A] MAIN C.B)
Digital voltmeter Positive terminal : VIF801 pin ⑨ (TP801)
Negative terminal : VIF801 pin ⑧ (TP802)
Adjust SFR801 so that the voltage is within the specification, 9.00±0.05V.



5.Audio circuit adjustment

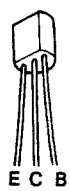
(1) Recording Bias Current Adjustment (C PRE AMP/AUDIO C.B)

VTVM HOT terminal : TP701

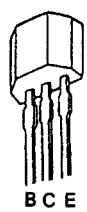
GND terminal : TP702

1) Switch the input selector to LINE.
2) Set the VCR to the no signal input state (with no input connected to the LINE AUDIO IN jack).
3) Set the VCR to the record mode and adjsut SFR701 so that the bias level is within the specification, 22±1mVRMS.

TRANSISTOR ILLUSTRATION



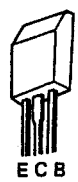
2SA933
2SC1740
2SC2002
2SC3940



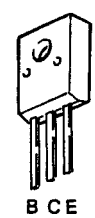
DTA144
DTC144

2SA1048

UN4211



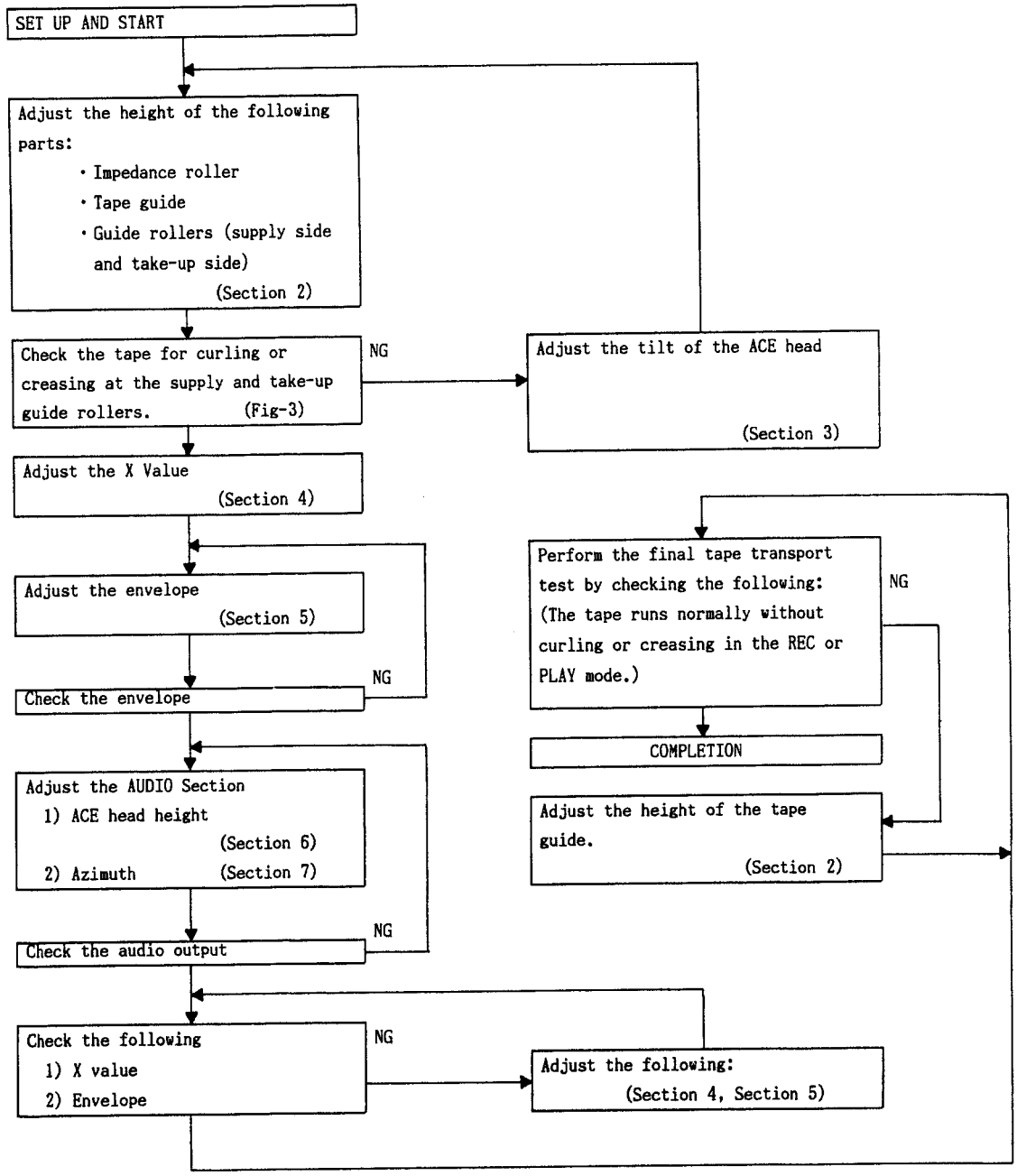
2SB733



2SC4148

MECHANICAL ADJUSTMENT

1. TAPE TRANSPORT ADJUSTMENT FLOWCHART

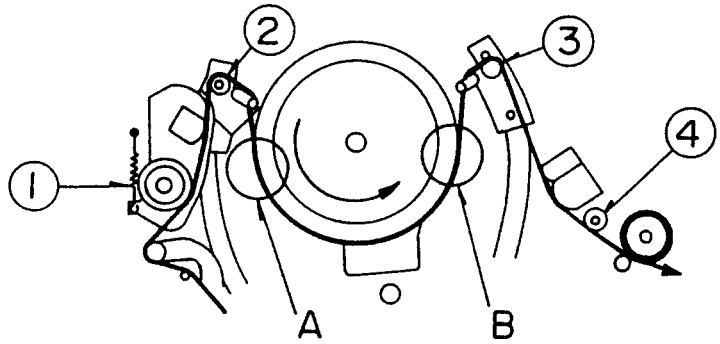

SET UP AND START
Adjust the height of the following parts:
• Impedance roller
• Tape guide
• Guide rollers (supply side and take-up side)
(Section 2)
Check the tape for curling or creasing at the supply and take-up guide rollers. (Fig-3)
NG
Adjust the tilt of the ACE head
(Section 3)
Adjust the X Value
(Section 4)
Adjust the envelope
(Section 5)
Check the envelope
NG
Adjust the AUDIO Section
1) ACE head height
(Section 6)
2) Azimuth (Section 7)
Check the audio output
NG
Check the following
1) X value
2) Envelope
NG
Adjust the following:
(Section 4, Section 5)
Perform the final tape transport test by checking the following:
(The tape runs normally without curling or creasing in the REC or PLAY mode.)
NG
COMPLETION
Adjust the height of the tape guide.
(Section 2)

2. TAPE RUNNING POSITION ADJUSTMENT
(GUIDE ROLLER/TAPE GUIDE/IMPEDANCE ROLLER)

Set-up

Lift the "Main circuit board".

1. Perform the height adjustment for the following items to obtain the proper tape running position. (See Figure-1)
   - ① Impedance roller
   - ② Guide roller (Supply side)
   - ③ Guide roller (Take-up side)
   - ④ Tape guide



Fig—1

2. Load a blank tape and set it to the PLAY mode. Check the tape transport at points "A" and "B" as shown in Fig-1.

3. Operate it between the PLAY and STOP modes several times.

4. Observe the tape transport at the "Lead surface of the cylinder" during the PLAY mode, and confirm that the tape runs smoothly along the "Lead surface of the cylinder" without slipping downward or upward. (See Figure-2)

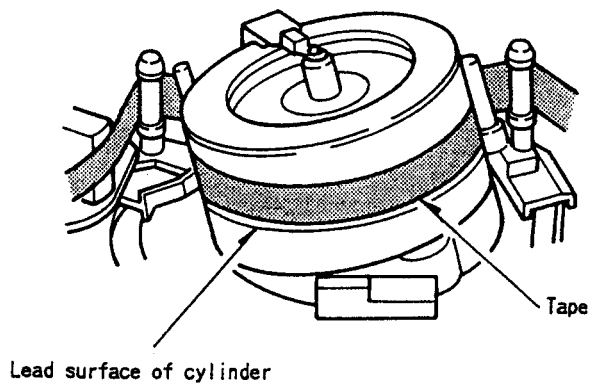


Fig-2

5. During loading, play and unloading, observe the tape at the supply and take-up "Guide rollers", "Tape guide" and "Impedance roller". Confirm that there is no curling or creasing etc., as shown in Fig-3.

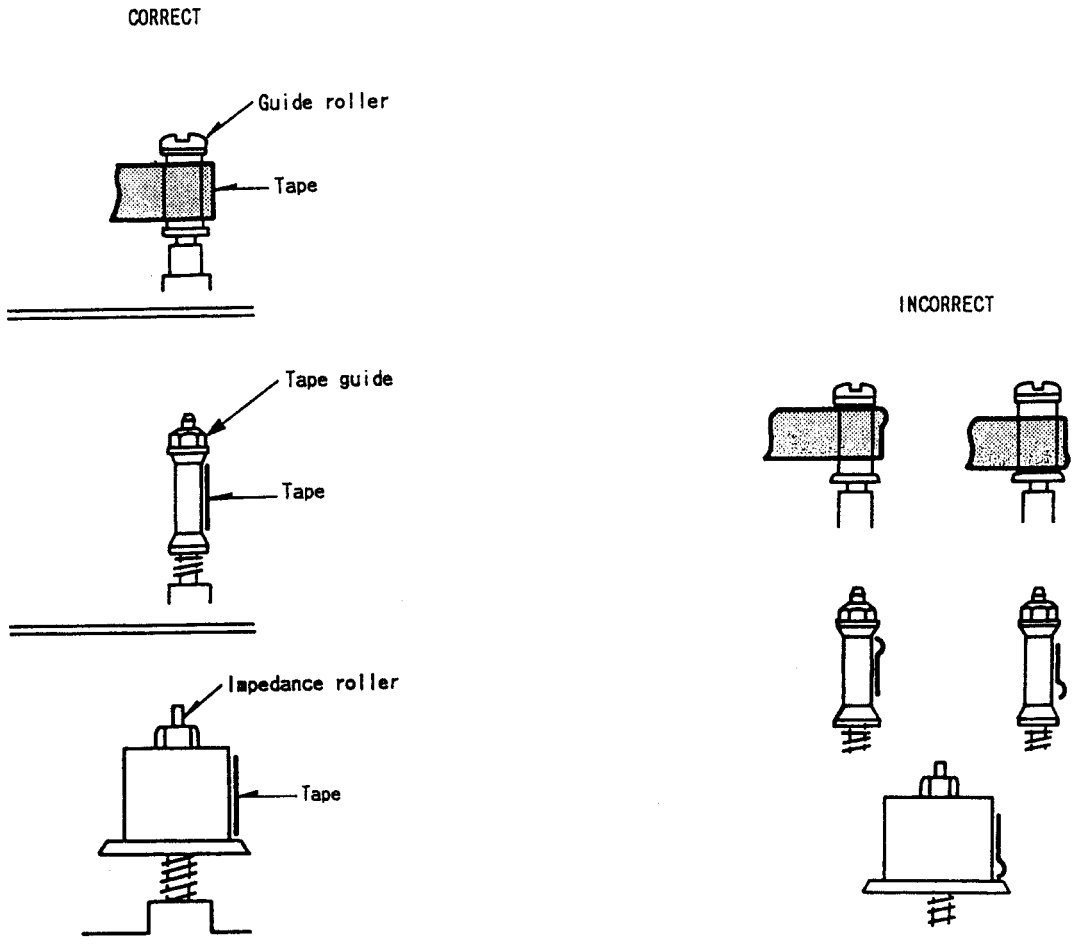


Fig-3

6. If any curling or creasing is noted, adjust "Tape guide roller" and "Impedance roller" first. In this case, adjust the "Impedance roller" in both PLAY and REV modes so that the tape runs as shown in Fig-4.

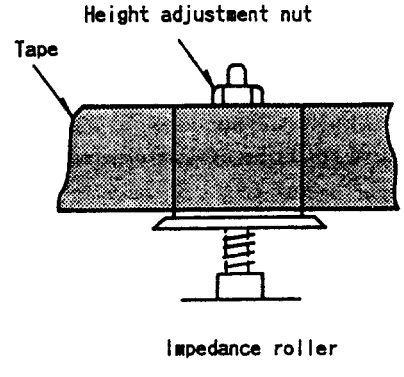


Fig-4

7. Next, adjust the "Guide roller" height. Insert the adjustment driver (J2) into the "Guide roller" top. (See Figure-5)
   Adjust the height by turning the driver slightly so that the tape runs on the "Guide roller" as shown in Fig-3, and the lower edge of the tape runs along the "Lead surface of the cylinder".

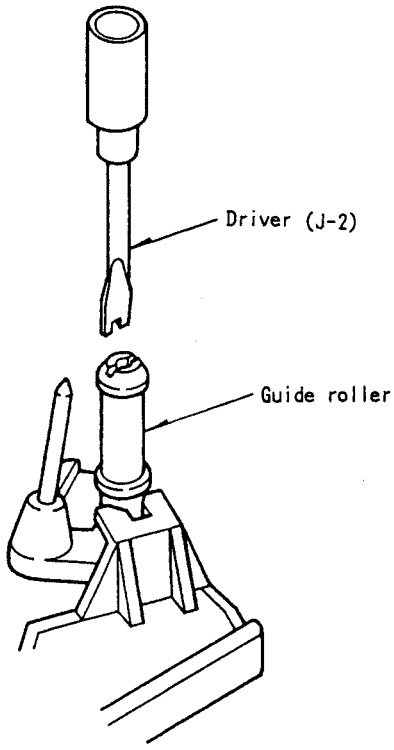
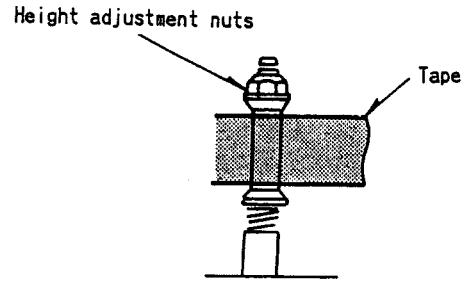


Fig-5



Tape Guide

Fig-6

8. After completion of the supply side "Guide roller" adjustments, adjust "Tape guide" so that tape runs as shown in Fig-6 and adjust the take-up side "Guide roller" by using the same procedures as for the supply side adjustments.
   In this case, adjust the "Guide roller" height first.

9. Confirm that there is no curling or creasing at the "Impedance roller" (Both PLAY and REV modes). If there is any curling or creasing at the "Impedance roller", adjust the same procedures of Fig-6.

10. Finally, confirm that there is no curling or creasing at the take-up side guide roller and tape guide. If there is any curling or creasing between the take-up side "Guide roller" and the "ACE head", adjust the "ACE head".

3. ACE HEAD ADJUSTMENT

1. Load a recorded tape and set the it to PLAY mode.

2. Adjust the height of the edge of the "Audio track" on the "Audio control head" by using the height adjustment nut (A) and the "Tilt adjustment screw" (C) so that the tape transport is smooth at the "Take-up guide pole". Align the "Audio control head" height. (See Figure-7)

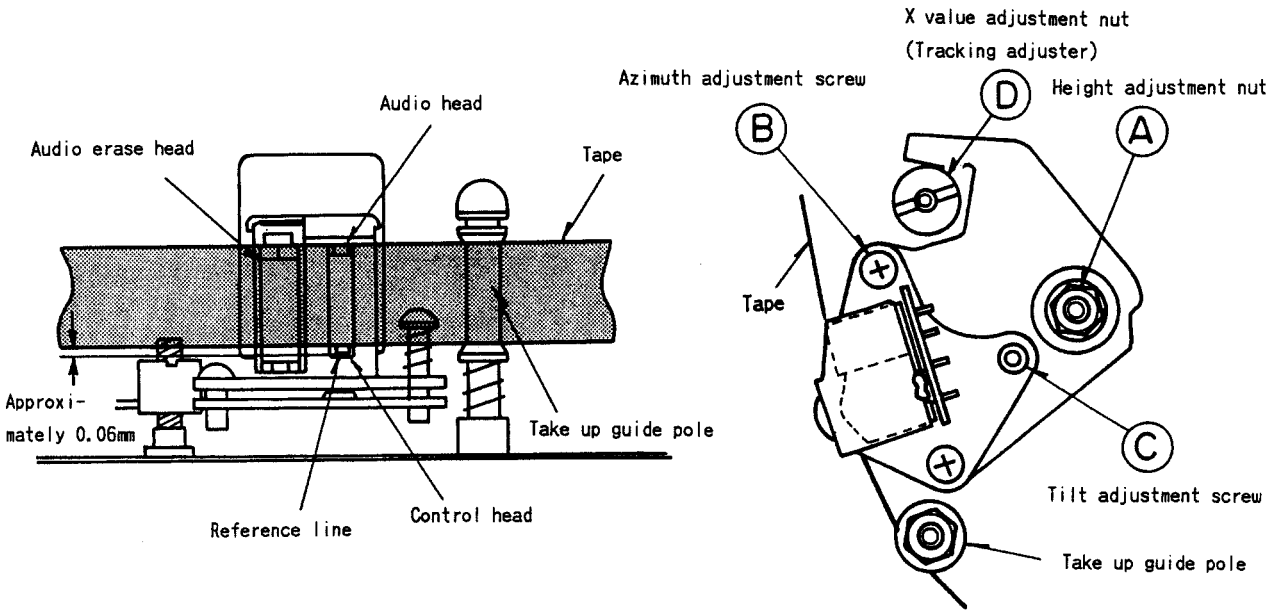


Fig-7

3. The fine adjustment is not required at this time.
   The following conditions are sufficient :
   (a) Proper tape transport between the "Audio control head" and the "Take-up guide pole".
   (b) Stable SERVO system operation (proper pickup of tape's recorded control signal).

4. X VALUE ADJUSTMENT (PB FM PEAK ADJUSTMENT)

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
MAIN C.B IC411 26 pin SERVO/SYSCON C.B TP201 2 pin	Oscilloscope	PLAY (SP) MODE Test tape TTV-P2

ADJ. Location	ADJ. Value
X value adjustment nut	Maximum level (CH1 PB Y FM signal)

TEST EQUIPMENT CONNECTING DIAGRAMS

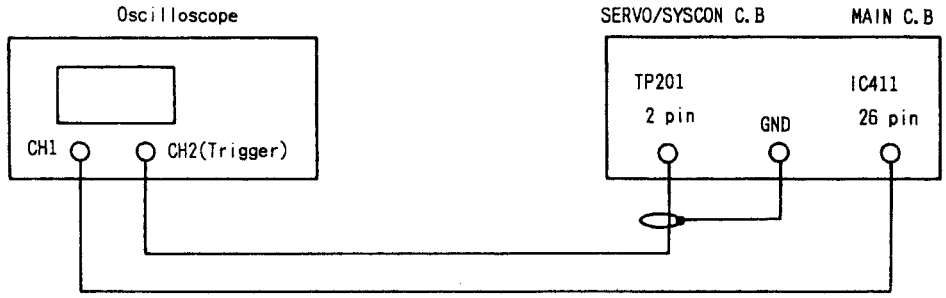


Fig-8

1. Connect the equipment as shown in Fig-8.

2. Adjust RV901 (Tracking volume) to its center position. (clockwise)

3. Adjust the "X value adjustment nut Ⓓ" for maximum PB FM Signal for CH1 by using TTV-P2 test tape. (See Figure-9)

4. After adjusting the "X value", check that the output level of the PB FM Signal for CH1 changes symmetrically by rotating RV901 (Tracking volume).

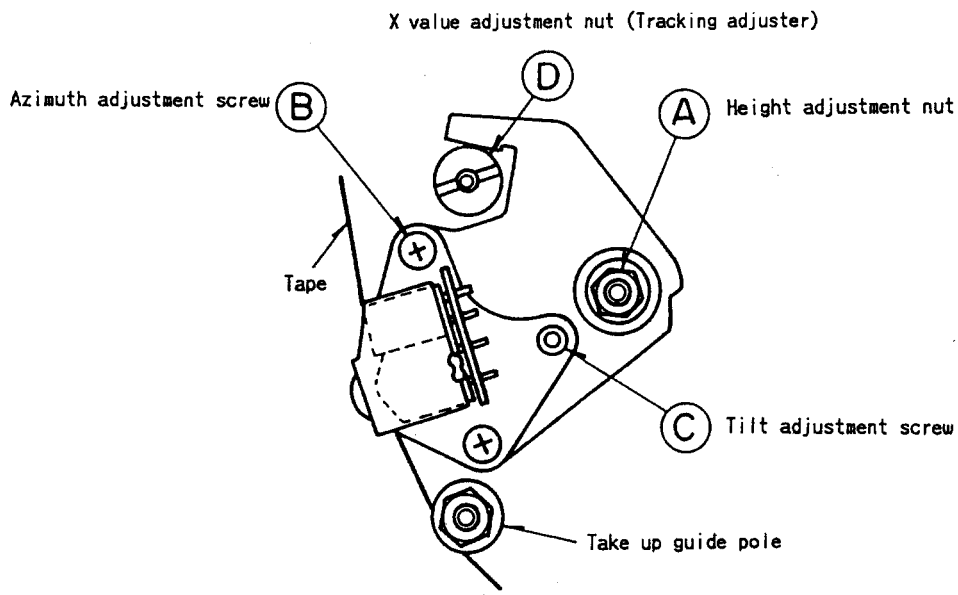


Fig-9

5. ENVELOPE WAVE FORM ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
MAIN C.B IC411 26 pin SERVO/SYSCON C.B TP201 2 pin	Oscilloscope	PLAY (SP) MODE Test tape TTV-P2

ADJ. Location	ADJ. Value
Guide rollers	Maximum level and correct waveform (PB Y FM Signal)

TEST EQUIPMENT CONNECTING DIAGRAMS

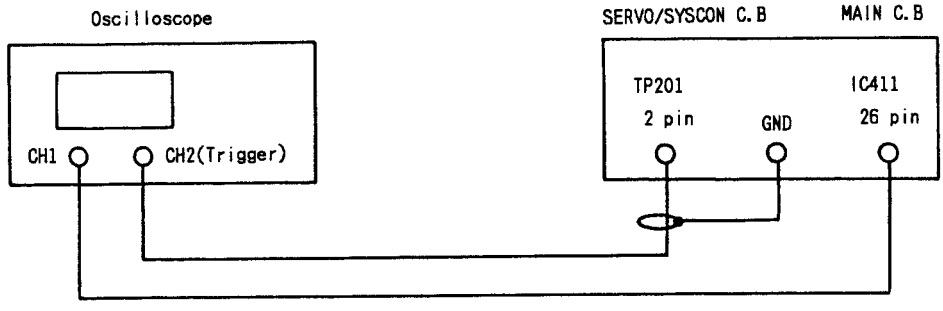


Fig.-10

1. Connect equipment as shown in Fig-10.

2. Playback the test tape TTV-P2.

3. The envelope waveform can be performed by adjusting the height of both the supply side and take-up side "Guide rollers".
   Finaly adjust the height of "Guide rollers" so that the envelope waveform is as flat as possible.

4. Set RV901 (Tracking Volume) to its center position and confirm that a nearly maximum level is obtained.
   Then rotate the RV901 (Tracking Volume) in both directions while adjusting the height of "Guide rollers", in order to obtain the envelope waveform which is as flat as possible.
   If the tape is above or lower the helical tape position, the envelope waveforms will take the shape as shown in Fig-11 and Fig-12.

5. Adjust for maximum flatness of the envelope waveform according to the Fig-11 and Fig-12.

6. After adjustment, rotate RV901 (Tracking Volume) counterclockwise and clockwise, and check that the waveform changes symmetrically.

7. Check the tape curl. (Refer to Section 2)

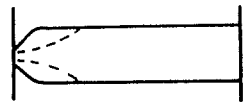
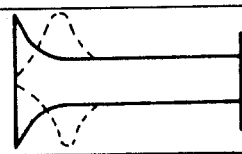
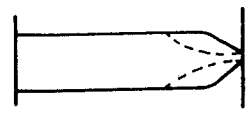
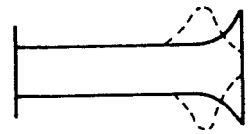
	Tape is too high	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.	 	 
Adjustment	Supply side "Guide roller" rotated clockwise direction (lowers "Guide roller") to flatten envelope.	Take-up side "Guide roller" rotated clockwise direction (lowers "Guide roller") to flatten envelope.

Fig-11

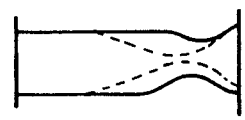
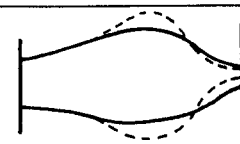
	Tape is too low	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		 
Adjustment	Supply side "Guide roller" rotated counterclockwise direction (raises "Guide roller") to flatten envelope.	Take-up side "Guide roller" rotated counterclockwise direction (raises "Guide roller") to flatten envelope.

Fig-12

6. ACE HEAD HEIGHT/ACE HEAD TILT ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
AUDIO OUTPUT	Oscilloscope AC voltmeter	PLAY (SP) MODE Test tape TTV-P1

ADJ. Location	ADJ. Value
Height adjustment nut Azimuth adjustment screw	Maximum level (AC voltmeter)
Tilt adjustment screw	

TEST EQUIPMENT CONNECTING DIAGRAMS

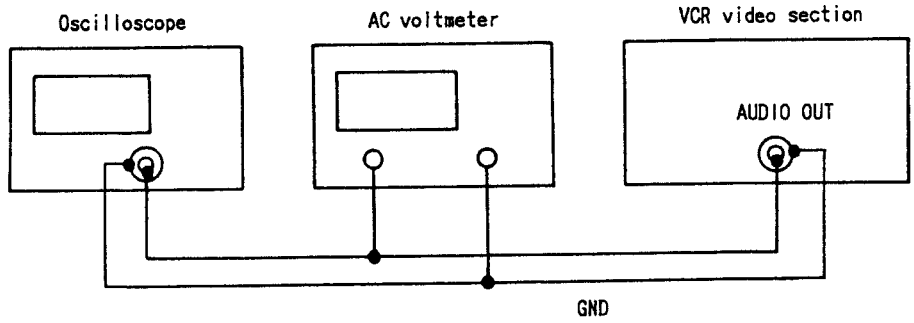


Fig-13

1. Connect equipment as shown in Fig-13.

2. Confirm that the running between the "Take-up guide roller" and the "ACE head" has no slack. If the tape has slack, take it up by turning the "Tilt adjustment screw Ⓒ". (See Figure-15)
   Then readjust "Guide roller " height in section 2 and the "X value" in section 4.

3. After confirming on the oscilloscope that a 1kHz audio signal is being output by playing back TTV-P1 test tape, adjust the "Height adjustment nut Ⓐ" so that the AC voltmeter's reading is brought to its maximum level.
   (See Figure-7)

4. Adjust the "Azimuth adjustment screw Ⓑ" so that the AC voltmeter's reading is brought to its maximum level.
   (See Figure-7)

7. ACE HEAD AZIMUTH ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
AUDIO OUTPUT	Oscilloscope AC voltmeter	PLAY (SP) MODE Test tape TTV-P2

ADJ. Location	ADJ. Value
Azimuth adjustment nut	Maximum level (AC voltmeter)

Fig-14

TEST EQUIPMENT CONNECTING DIAGRAMS

See Figure-13.

1. After confirming on the oscilloscope that a 6kHz audio signal is being output by playing back TTV-P2 test tape, adjust the "Azimuth adjustment screw (B)" so that the AC voltmeter's reading or oscilloscope waveform is brought to its maximum lebel. (See Figure-15)

Note : Fix the screw (B) and (C) with lock paint after readjustment.

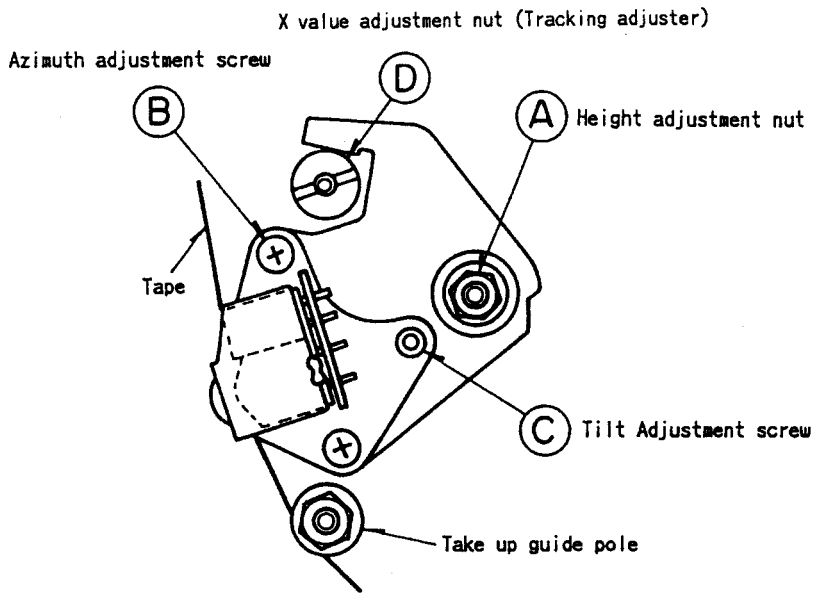
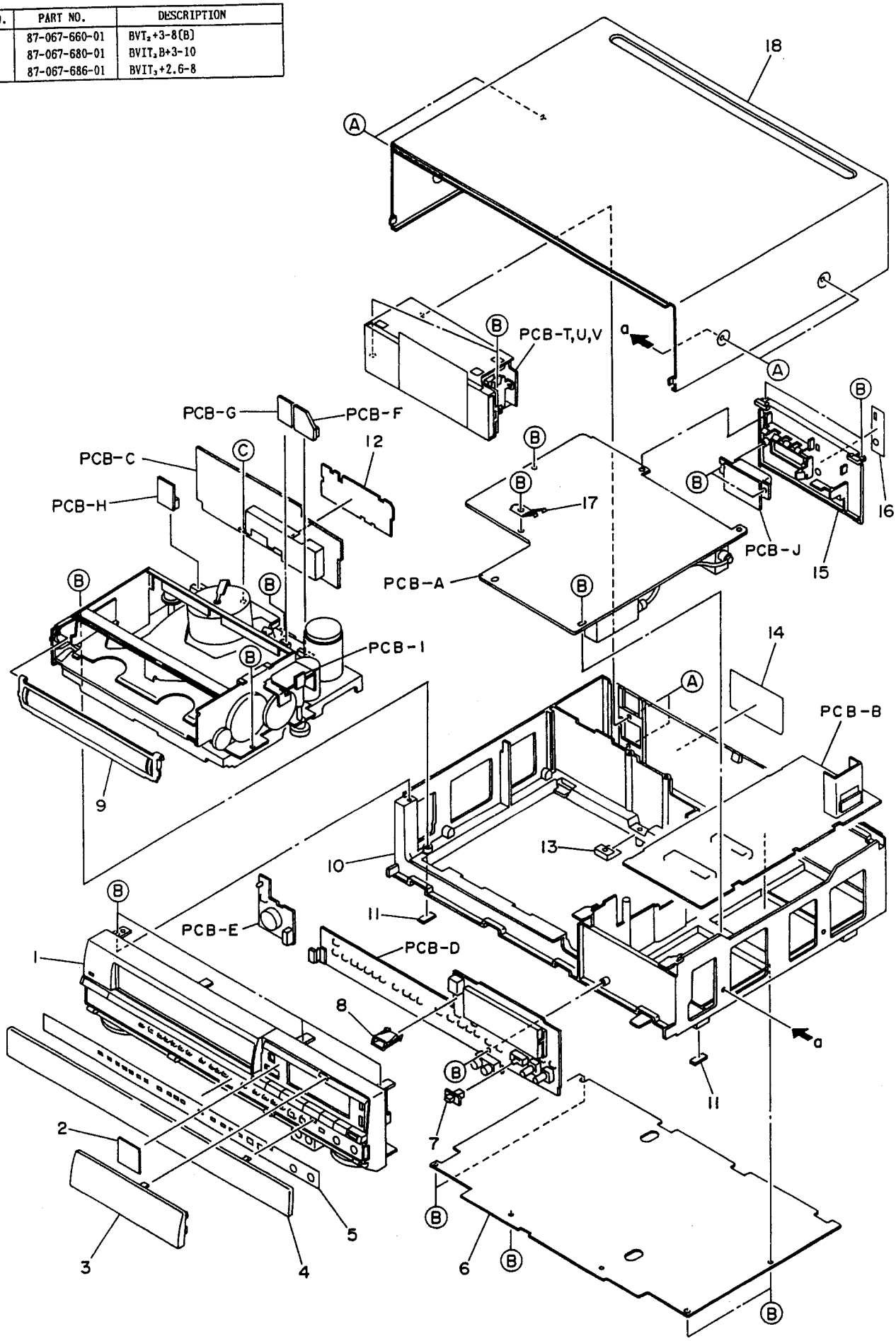


Fig-15

EXPLODED VIEW – 1

REF.NO.	PART NO.	DESCRIPTION
A	87-067-660-01	BVT$_2$+3-8(B)
B	87-067-680-01	BVIT$_2$B+3-10
C	87-067-686-01	BVIT$_3$+2.6-8

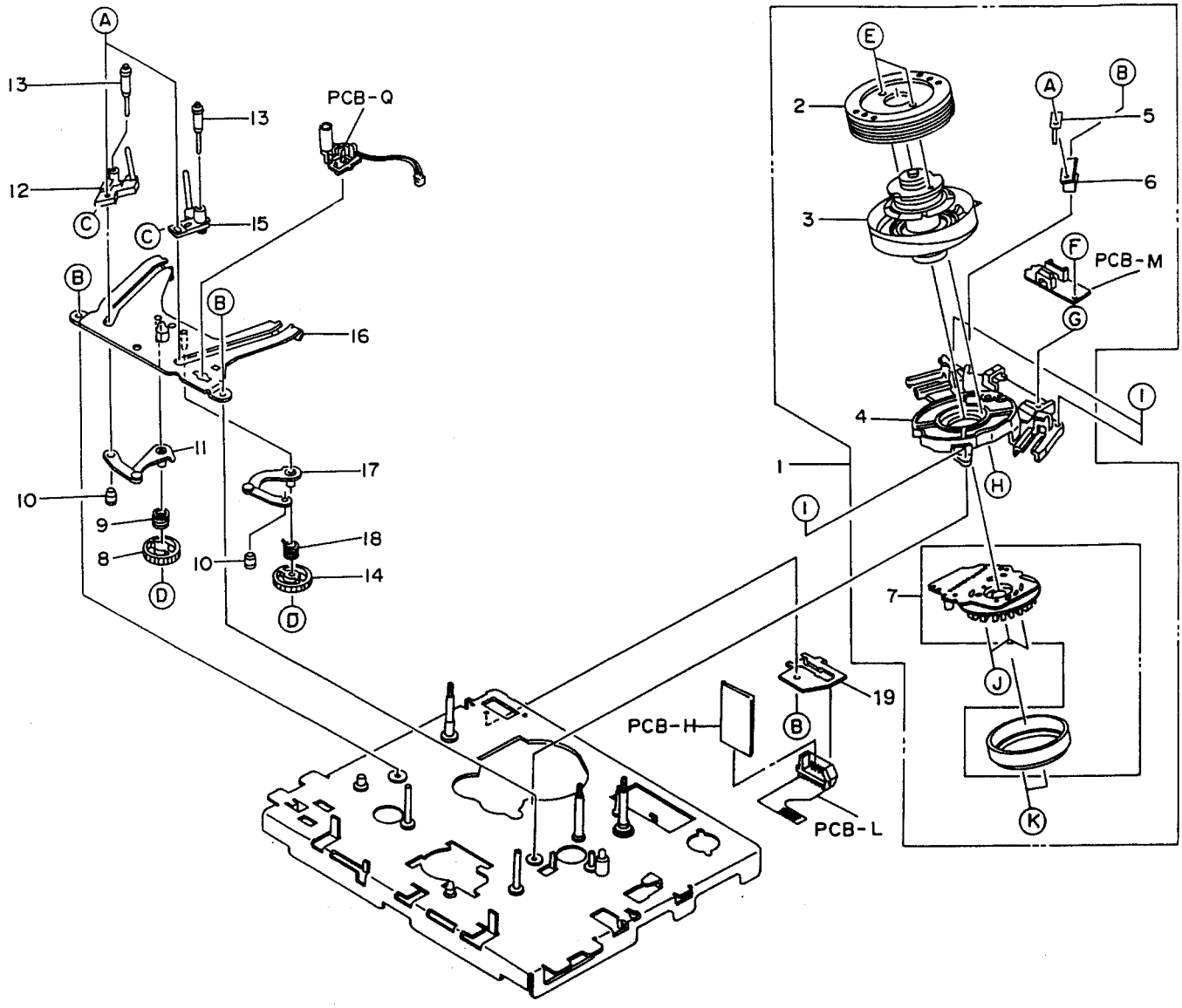


MECHANICAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1-1	*09-057-051-010	CABINET FRONT ASSY	*	1
	1-2	*89-JU5-008-010	FILTER(G50,G53,55)	*	1
	1-2	*89-JU6-004-010	FILTER(G51,DK510GPSKSE)	*	1
	1-3	*89-JU5-003-010	WINDOW	*	1
	1-4	*89-JU5-002-010	DOOR(G50GPSH)	*	1
	1-4	*89-JU5-021-110	DOOR(G50DIPH)	*	1
	1-4	*89-JU5-031-010	DOOR(G50IPF)	*	1
	1-4	*89-JU6-001-010	DOOR(G51GPSE)	*	1
	1-4	*89-JU4-006-010	DOOR(G53AGPSE)	*	1
	1-4	*89-JU4-001-010	DOOR(G55GPSE)	*	1
	1-4	*89-JU4-004-010	DOOR(G55IPK)	*	1
	1-4	*89-JU6-009-010	DOOR(DK510GPSKSE)	*	1
	1-5	*89-JU5-007-010	PLATE,TIMER(G50,G53,G55)	*	1
	1-5	*89-JU6-002-010	PLATE,TIMER(G51,DK510GPSKSE)	*	1
	1-6	*89-JU5-020-010	BOTTOM,PLATE	*	1
	1-7	*89-JU5-015-010	KNOB,SLIDE(G50,G53,G55)	*	1
	1-8	*89-JU7-201-010	REFLECTOR(G50,G53,G55)		1
	1-9	*89-JU7-003-110	DOOR,CASSETTE(G50,G53)		1
	1-9	*89-JU6-003-010	DOOR,CASSETTE(G51)	*	1
	1-9	*89-JU4-008-010	DOOR,CASSETTE(G55)	*	1
	1-9	*89-JU6-008-010	DOOR,CASSETTE(DK510GPSKSE)	*	1
	1-10	*89-JU5-010-010	CABINET,MAIN	*	1
	1-11	*89-JU5-018-010	FELT,FOOT	*	2
	1-12	---	SHIELD,RP2		1
	1-13	*89-JU5-217-010	CLAMP EARTH(G50,G51,DK510GPSKSE)	*	1
	1-14	*89-JU5-014-010	PLATE,SPEC(G50GPSH)	*	1
	1-14	*89-JU5-027-010	PLATE,SPEC(G50DIPH)	*	1
	1-14	*89-JU5-032-010	PLATE,SPEC(G50IPF)	*	1
	1-14	*89-JU6-005-010	PLATE,SPEC(G51GPSE)	*	1
	1-14	*89-JU4-009-010	PLATE,SPEC(G53AGPSE)	*	1
	1-14	*89-JU4-011-010	PLATE,SPEC(G55GPSE)	*	1
	1-14	*89-JU4-012-010	PLATE,SPEC(G55AGPSE)	*	1
	1-14	*89-JU4-010-010	PLATE,SPEC(G55IPK)	*	1
	1-14	*89-JU6-006-010	PLATE,SPEC(DK510GPSKSE)	*	1
	1-15	*89-JU5-011-210	PANEL,JACK(G50,DK510GPSKSE)	*	1
	1-15	*89-JU4-003-210	PANEL,JACK(G51,G53,G55)	*	1
	1-16	*89-JU5-024-010	PLATE,JACK(G50GPSH,G50IPF,G53,G55)	*	1
	1-16	*89-JU5-025-010	PLATE,JACK(G50DIPH)	*	1
	1-16	*89-JU6-007-010	PLATE,JACK(DK510GPSKSE)	*	1
	1-17	*89-JU7-211-110	PLATE,EARTH		1
	1-18	*89-JU5-009-010	CABINET,STEEL	*	1

EXPLODED VIEW – 2

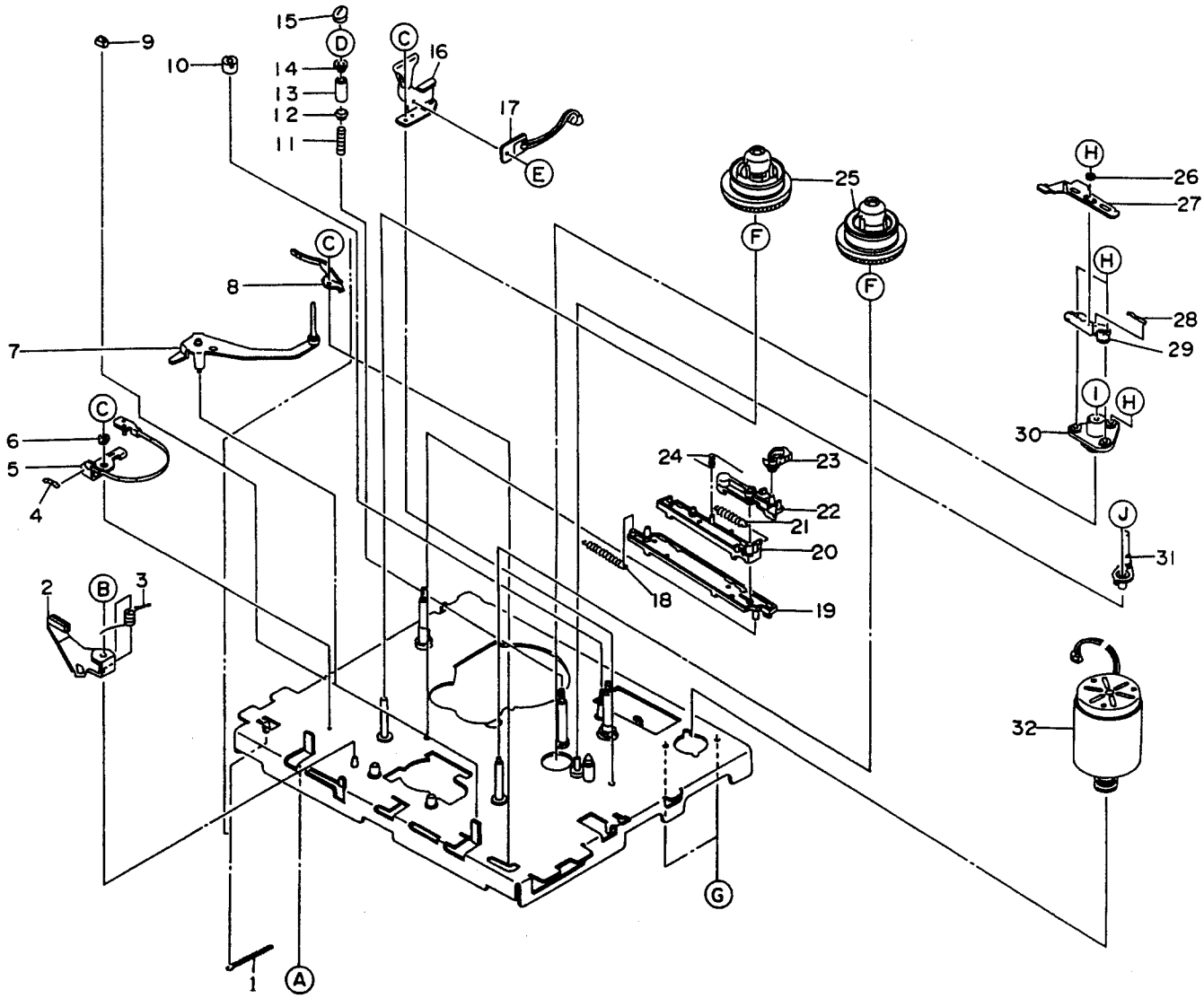
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-665-000-00	CUP SCREW 2.6×3	E	S9-972-000-00	BIND TAMS SCREW 3×8	I	S9-205-000-00	C TAPPING SCREW 3×10
B	S9-192-000-00	C TAPPING SCREW 2.6×5	F	S9-973-000-00	W TAMS SCREW 2.6×6	J	S9-050-000-00	SCREW 2.6×2.0
C	S9-952-000-00	SET SCREW 2.0×3(PLANE)	G	S9-715-000-00	WASHER 2.6	K	S9-098-000-00	TAMS SCREW 2.6×6
D	S9-884-000-00	PW CUT 2.6×6×0.5	H	S9-552-000-00	SCREW(FOR CAMERA) 2×5			



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	2-1	*S8-059-013-090	CYLINDER ASSY		1
	2-2	S8-059-010-160	UPPER DRUM		1
	2-3	*S8-059-013-040	LOWER DRUM ASSY		1
	2-4	*S8-059-010-010	CYLINDER MOUNT		1
	2-5	*S8-059-010-230	DRUM EARTH		1
	2-6	*S8-059-010-020	DRUM EARTH BRACKET		1
	2-7	S6-004-090-010	MOTOR TM82		1
	2-8	*S8-059-030-060	T LOADING GEAR L		1
	2-9	*S8-059-030-080	LOADING GEAR SPRING L		1
	2-10	*S8-059-030-140	LOADING BOSS		2
	2-11	*S8-059-035-020	LOADING PLATE L SEMI ASSY		1
	2-12	*S8-059-030-040	LOADING BLOCK L		1
	2-13	*S8-000-030-370	ROLLER POST ST		1
	2-14	*S8-059-030-070	T LOADING GEAR R		1
	2-15	*S8-059-030-050	LOADING BLOCK R		1
	2-16	*S8-059-035-010	LOADING BASE SEMI ASSY		1
	2-17	*S8-059-035-030	LOADING PLATE R SEMI ASSY		1
	2-18	*S8-059-030-090	LOADING GEAR SPRING R		1
	2-19	---	CONNECTOR BRACKET		1

EXPLODED VIEW – 3

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-999-030-15	PW CUT 2.1×4×0.5	E	S9-096-000-00	TAMS SCREW 2.6×4	I	S9-999-060-00	NYLON WASHER 2.92×5×0.5
B	S9-876-000-00	PW CUT 2.1×5×0.5	F	S9-912-000-00	PW 3.1×6×0.5	J	S9-884-000-00	PW 2.6×6×0.5CUT
C	S9-191-000-00	C TAPPING SCREW 2.6×4	G	S9-105-000-00	TAMS SCREW 3×4			
D	S9-453-000-00	NUT 3.0	H	S9-495-000-00	C TAPPING SCREW 2.6×8			

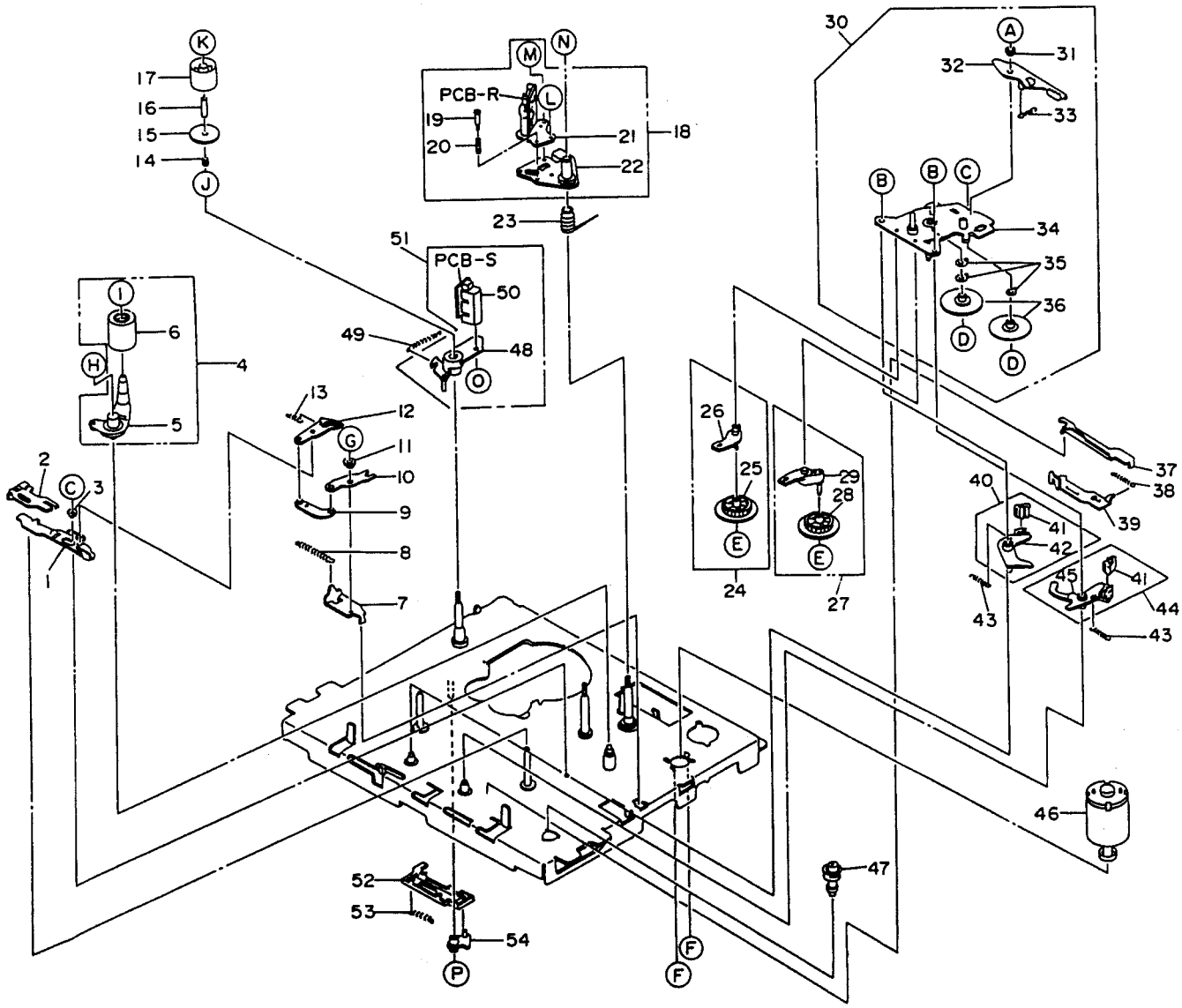


PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	3-1	*S8-059-080-200	BT ACTUATE PLATE SPRING		1
	3-2	*S8-059-103-040	S SOFT BRAKE ASSY		1
	3-3	*S8-059-100-220	S SOFT BRAKE SPRING		1
	3-4	*S8-059-080-170	BAND HOLDER SPRING		1
	3-5	*S8-059-083-020	BT BAND ASSY		1
	3-6	*S8-059-080-150	BAND HOLDER COLLAR		1
	3-7	*S8-059-085-010	BT ARM SEMI ASSY		1
	3-8	*S8-059-080-090	BACK TENSION SUPPORT		1
	3-9	*S8-059-020-230	DAMPER RUBBER		1
	3-10	*S8-059-020-290	TRACKING ADJUSTER		1
	3-11	*S8-059-020-260	TAPE GUIDE SPRING		1
	3-12	*S8-000-030-290	TAPE GUIDE FLANGE D		1
	3-13	*S8-000-030-140	TAPE GUIDE		1
	3-14	*S8-000-030-280	TAPE GUIDE FLANGE C		1
	3-15	*S8-000-030-190	GUIDE CAP		1
	3-16	*S8-059-023-010	OPEN ANGLE ASSY		1
	3-17	*S6-808-080-040	DEW SENSOR EYH-S10R		1
	3-18	*S8-059-100-100	BRAKE ACTUATE BASE SPRING		1
	3-19	*S8-059-100-090	BRAKE ACTUATE BASE		1
	3-20	*S8-059-100-110	BRAKE PLATE		1

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	3-21	*S8-059-100-120	BRAKE PLATE SPRING		1
	3-22	*S8-059-100-130	TRIGGER LEVER		1
	3-23	*S8-059-100-140	TRIGGER HOOK		1
	3-24	*S8-059-100-230	TRIGGER LEVER SPRING		1
	3-25	S8-059-053-010	REEL ASSY		2
	3-26	*S8-059-170-100	RG SLIDE PLATE COLLAR		1
	3-27	*S8-059-170-030	RG SLIDE PLATE		1
	3-28	*S8-059-170-110	RG SLIDE SPRING		1
	3-29	*S8-059-170-090	RG SLIDE BASE		1
	3-30	*S8-059-073-010	METAL HOUSING ASSY		1
	3-31	*S8-059-175-010	RG ARM SEMI ASSY		1
	3-32	S8-059-073-020	CAPSTAN MOTOR ASSY		1

EXPLODED VIEW – 4

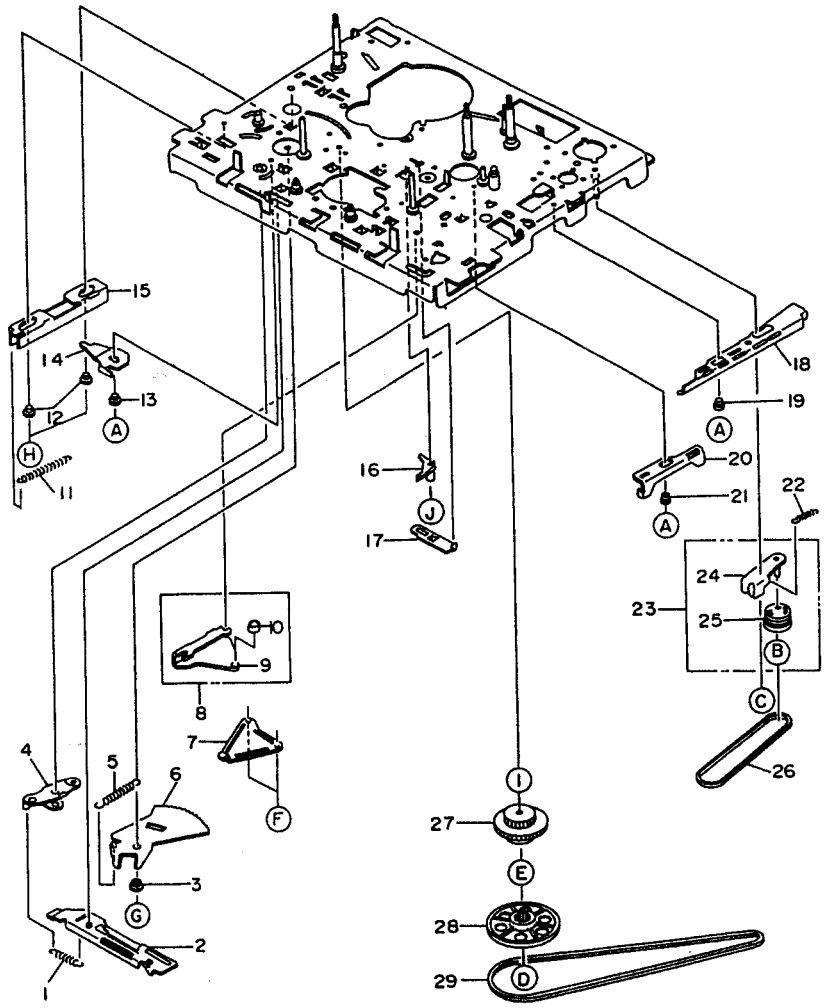
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-974-000-00	SL FH SCREW 2×3	G	S9-096-000-00	TAMS SCREW 2.6×4	M	S9-705-000-00	LONG LOCK SCREW 2.6×7
B	S9-097-000-00	TAMS SCREW 2×4	H	S9-999-030-00	PW CUT 5×8×0.5	N	S9-953-000-00	NYLON NUT M3
C	S9-192-000-00	C TAPPING SCREW 2.6×5	I	S9-038-000-00	SCREW 2.6×4	O	S9-953-000-00	SCREW FLANGE 2×3
D	S9-500-000-00	E RING S1.5	J	S9-387-000-00	PLANE WASHER 3×8×0.5	P	S9-876-000-00	PW 2.1×5×0.5CUT
E	S9-743-000-00	PW CUT 1.6×3.8×0.3	K	S9-953-000-00	NYLON NUT M3			
F	S9-105-000-00	C TAPPING SCREW 3×4	L	S9-999-000-25	SCREW 3.6 (SHAPE TYPE)			



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	4-1	*S8-059-060-240	P SLIDE PLATE A		1
	4-2	*S8-059-060-250	P SLIDE PLATE B		1
	4-3	*S8-059-060-180	COLLAR		1
	4-4	S8-059-063-010	PINCH ROLLER ARM ASSY		1
	4-5	*S8-059-065-010	PINCH ROLLER ARM SEMI ASSY		1
	4-6	S8-000-090-220	PINCH ROLLER A		1
	4-7	*S8-059-060-190	P ANGLE HOLDER		1
	4-8	*S8-059-060-200	P-SPRING,ROLLER		1
	4-9	*S8-059-060-060	JOINT PLATE		1
	4-10	*S8-059-060-050	P ACTUATE ANGLE		1
	4-11	*S8-059-060-180	COLLAR		1
	4-12	*S8-059-060-040	P ACTUATE ARM		1
	4-13	*S8-059-060-090	P-SPRING,ACTUATE ARM		1
	4-14	*S8-059-040-090	TAPE GUIDE FLANGE SPRING		1
	4-15	*S8-059-040-070	TAPE GUIDE FLANGE A		1
	4-16	*S8-059-040-060	IMPEDANCE ROLLER SLEEVE		1
	4-17	*S8-059-040-050	IMPEDANCE ROLLER		1
	4-18	*S8-059-043-080	HEAD BASE ASSY		1
	4-19	---	AZIMUTH SPRING SCREW		1
	4-20	---	AZIMUTH SPRING		1
	4-21	S6-204-150-060	ACE HEAD HV225211		1
	4-22	---	HEAD BASE SEMI ASSY		1
	4-23	---	HEAD SPRING		1
	4-24	*S8-059-093-050	P GEAR ASSY		1
	4-25	*S8-059-090-200	PLAY GEAR		1
	4-26	*S8-059-093-030	P GEAR ARM ASSY		1
	4-27	*S8-059-093-060	RF GEAR ASSY		1
	4-28	*S8-059-090-220	FF GEAR		1
	4-29	*S8-059-093-040	RF GEAR ARM ASSY		1
	4-30	*S8-059-093-070	SUB PLATE ASSY		1
	4-31	*S8-059-100-070	T SOFT BRAKE ARM COLLAR		1
	4-32	*S8-059-103-030	T SOFT BRAKE ASSY		1
	4-33	*S8-059-100-060	T-SPRING,SOFT BRAKE ARM		1
	4-34	---	SUB PLATE SEMI ASSY		1
	4-35	*S8-000-100-250	WAVE WASHER		3
	4-36	*S8-059-090-060	REEL DRIVE GEAR		2
	4-37	*S8-059-100-160	BRAKE LIFTER		1
	4-38	*S8-059-100-180	L BRAKE ACTUATOR SPRING		1
	4-39	*S8-059-100-170	L BRAKE ACTUATOR		1
	4-40	*S8-059-103-010	S BRAKE ARM ASSY		1
	4-41	*S8-059-100-190	BRAKE SHOE		2
	4-42	*S8-059-100-010	S BRAKE ARM		1
	4-43	*S8-059-100-020	BRAKE ARM SPRING		2
	4-44	*S8-059-103-020	T BRAKE ARM ASSY		1
	4-45	*S8-059-100-030	T BRAKE ARM		1
	4-46	S8-059-113-010	LM ASSY		1
	4-47	*S8-059-113-020	TRIGGER BEARING ASSY		1
	4-48	---	FE PLATE		1
	4-49	*S8-059-040-080	FE PLATE SPRING		1
	4-50	*S6-204-150-030	FE HEAD HVFMD 0006		1
	4-51	*S8-059-043-020	FE PLATE ASSY		1
	4-52	*S8-059-040-100	FE SLIDE PLATE		1
	4-53	*S8-059-040-120	FE ACTUATE SPRING		1
	4-54	*S8-059-040-110	FE ACTUATE LEVER		1

EXPLODED VIEW – 5

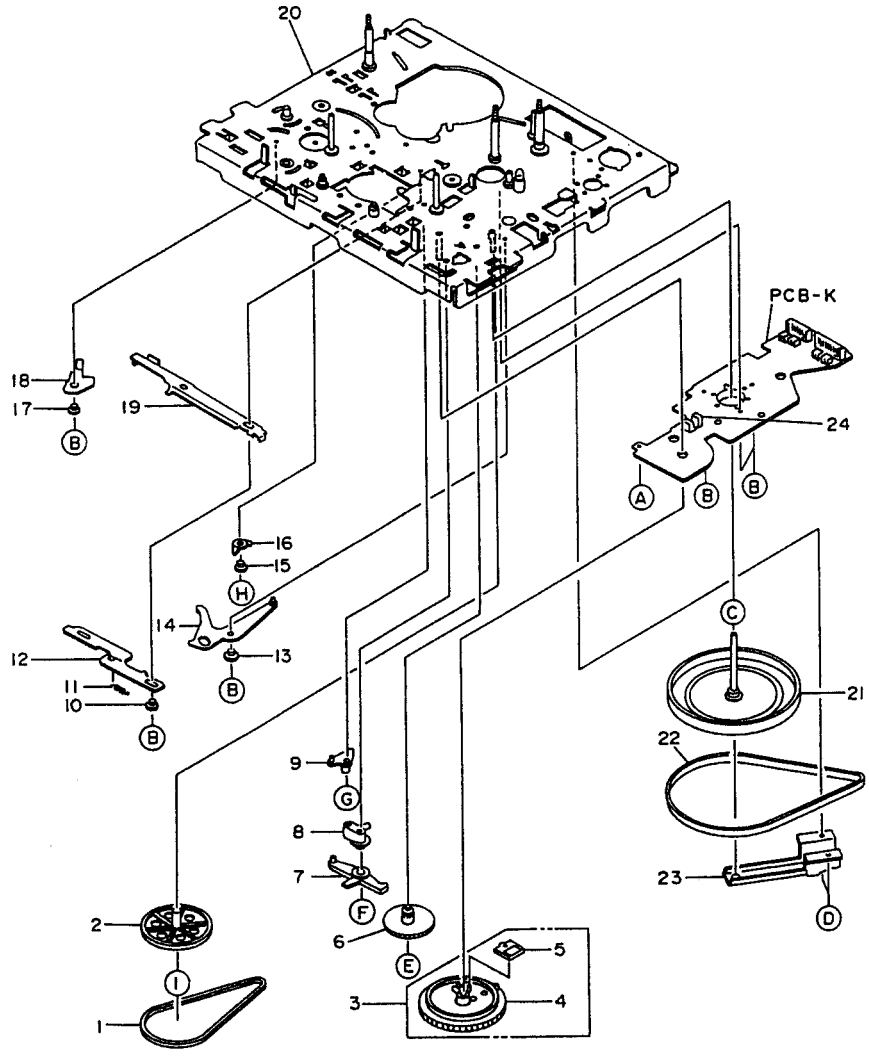
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-192-000-00	C TAPPING SCREW 2.6×5	E	S9-999-060-04	NYLON WASHER 2.98×6×0.3	I	S9-853-000-00	NYLON WASHEER 3.1×6×0.3
B	S9-743-000-00	PW CUT 1.6×3.8×0.5	F	S9-078-000-00	TAMS SCREW 2×5	J	S9-876-000-00	PW CUT 2.1×5×0.5
C	S9-876-000-00	PW CUT 2.1×6×0.5	G	S9-203-000-00	C TAPPING SCREW 3×6			
D	S9-884-000-00	PW CUT 2.6×6×0.5	H	S9-840-000-00	S TAPPNG SCREW 2.6×3.5			



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	5-1	*S8-059-120-050	LOADING ACTUATOR SPRING		1
	5-2	*S8-059-125-030	LOADING ACTUATOR SEMI ASSY		1
	5-3	*S8-059-120-100	L GEAR PLATE COLLAR		1
	5-4	*S8-059-125-020	LOADING ACTUATE LEVER SEMI ASSY		1
	5-5	*S8-059-120-120	L GEAR PLATE SPRING		1
	5-6	*S8-059-120-090	L GEAR PLATE		1
	5-7	*S8-059-120-110	LOADING LEVER REINFORCE PLATE		1
	5-8	*S8-059-123-010	LOADING LEVER ASSY		1
	5-9	---	LOADING LEVER SEMI ASSY		1
	5-10	---	CAM ROLLER		1
	5-11	*S8-059-080-130	BACK TENSION SPRING		1
	5-12	*S8-059-080-210	BT ACTUATE PLATE COLLAR		2
	5-13	*S8-059-060-180	COLLAR		1
	5-14	*S8-059-080-180	BT ACTUATE LEVER		1
	5-15	*S8-059-080-190	BT ACTUATE PLATE		1
	5-16	*S8-059-170-010	RG ACTUATE ARM		1
	5-17	*S8-059-170-020	RG ACTUATE		1
	5-18	*S8-059-150-070	L BRAKE PLATE		1
	5-19	*S8-059-060-180	COLLAR		1
	5-20	*S8-059-150-080	EJECT ACTUATOR		1
	5-21	*S8-059-060-180	COLLAR		1
	5-22	*S8-059-150-110	IDLER ARM SPRING		1
	5-23	*S8-059-153-030	E IDLER ARM ASSY		1
	5-24	---	E IDLER ARM SEMI ASSY		1
	5-25	---	EJECT PULLEY		1
	5-26	S8-059-150-060	FL BELT		1
	5-27	*S8-059-093-020	CLUTCH ASSY		1
	5-28	*S8-059-093-010	MIDDLE PULLEY ASSY		1
	5-29	*S8-059-090-170	DRIVE BELT		1

EXPLODED VIEW – 6

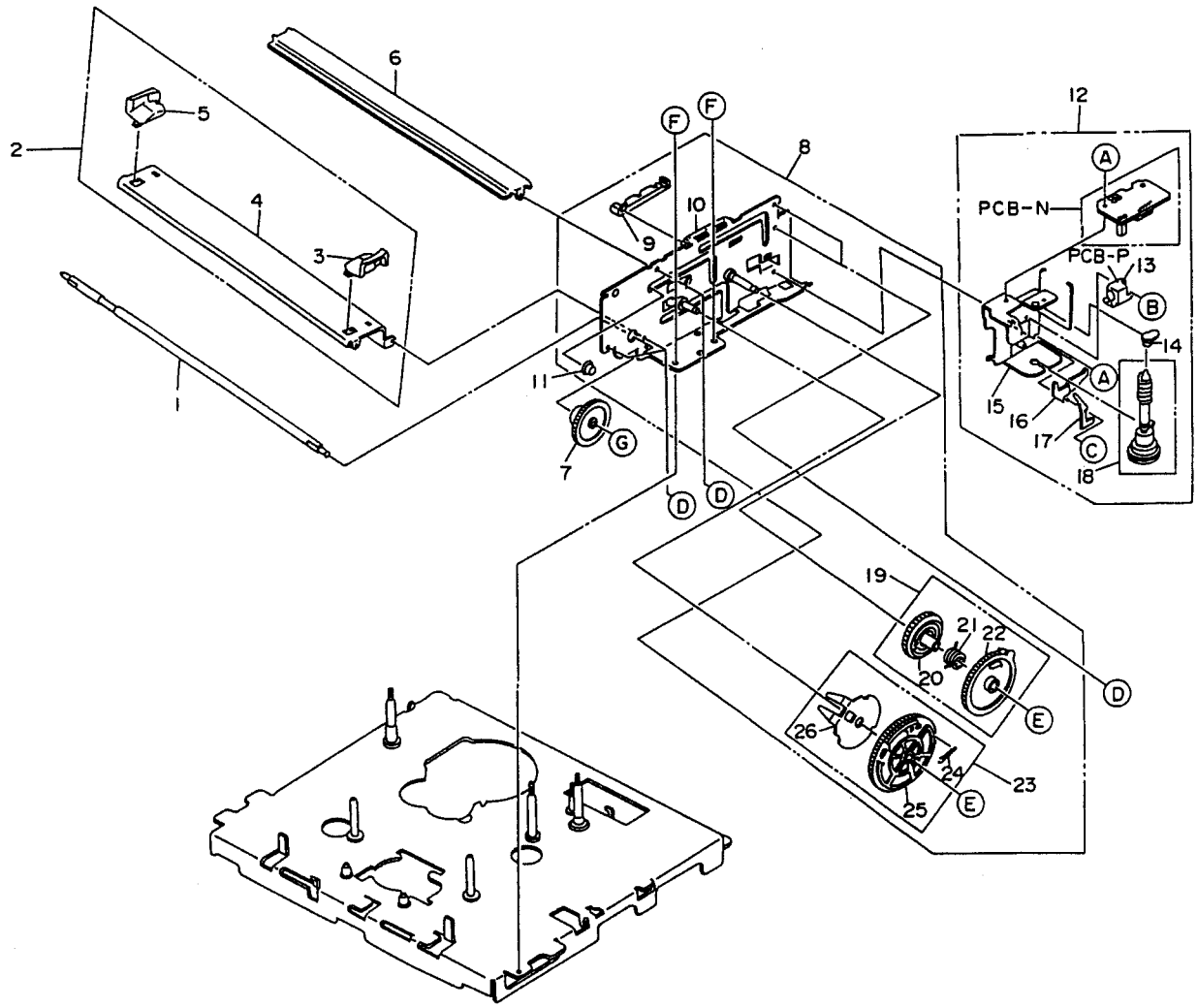
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-671-000-00	S TAPPING SCREW 2.6×5	D	S9-202-000-00	C TAPPING SCREW 3×5	G	S9-884-000-00	PW CUT 2.6×6×0.5
B	S9-192-000-00	C TAPPING SCREW 2.6×5	E	S9-876-000-00	PW CUT 2.1×5×0.5	H	S9-999-180-10	C TAPPING FH SCREW 2.6×4
C	S9-912-000-00	PW 3.1×6×0.5	F	S9-999-030-10	PW CUT 2.6×8×0.5	I	S9-743-000-00	PW CUT 1.6×3.8×0.3



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	6-1	S8-059-110-060	LOADING BELT		1
	6-2	*S8-059-110-030	LOADING PULLEY		1
	6-3	*S8-059-113-030	LOADING CAM ASSY		1
	6-4	---	LOADING CAM		1
	6-5	---	S BRUSH		1
	6-6	*S8-059-110-040	LOADING GEAR		1
	6-7	*S8-059-110-140	EJECT ARM		1
	6-8	*S8-059-110-130	BRAKE ACTUATE ARM		1
	6-9	*S8-059-110-120	SEARCH ARM B		1
	6-10	*S8-059-060-110	P SLIDER COLLAR		1
	6-11	*S8-059-060-230	P-SPRING,SLIDER		1
	6-12	*S8-059-060-100	P SLIDER		1
	6-13	*S8-059-060-170	P CAM LEVER COLLAR		1
	6-14	*S8-059-065-020	P CAM LEVER SEMI ASSY		1
	6-15	*S8-059-060-130	P CRANK COLLAR		1
	6-16	*S8-059-060-120	P CRANK		1
	6-17	*S8-059-060-180	COLLAR		1
	6-18	*S8-059-080-230	BT RETURN LEVER		1
	6-19	*S8-059-080-100	BT CHANGE PLATE		1
	6-20	---	CHASSIS SEMI ASSY		1
	6-21	*S8-059-070-140	FLYWHEEL CAPSTAN		1
	6-22	S8-059-070-100	MAIN BELT		1
	6-23	*S8-059-073-030	FL ANGLE ASSY		1
	6-24	*S6-808-080-030	REEL SENSOR		1

EXPLODED VIEW – 7

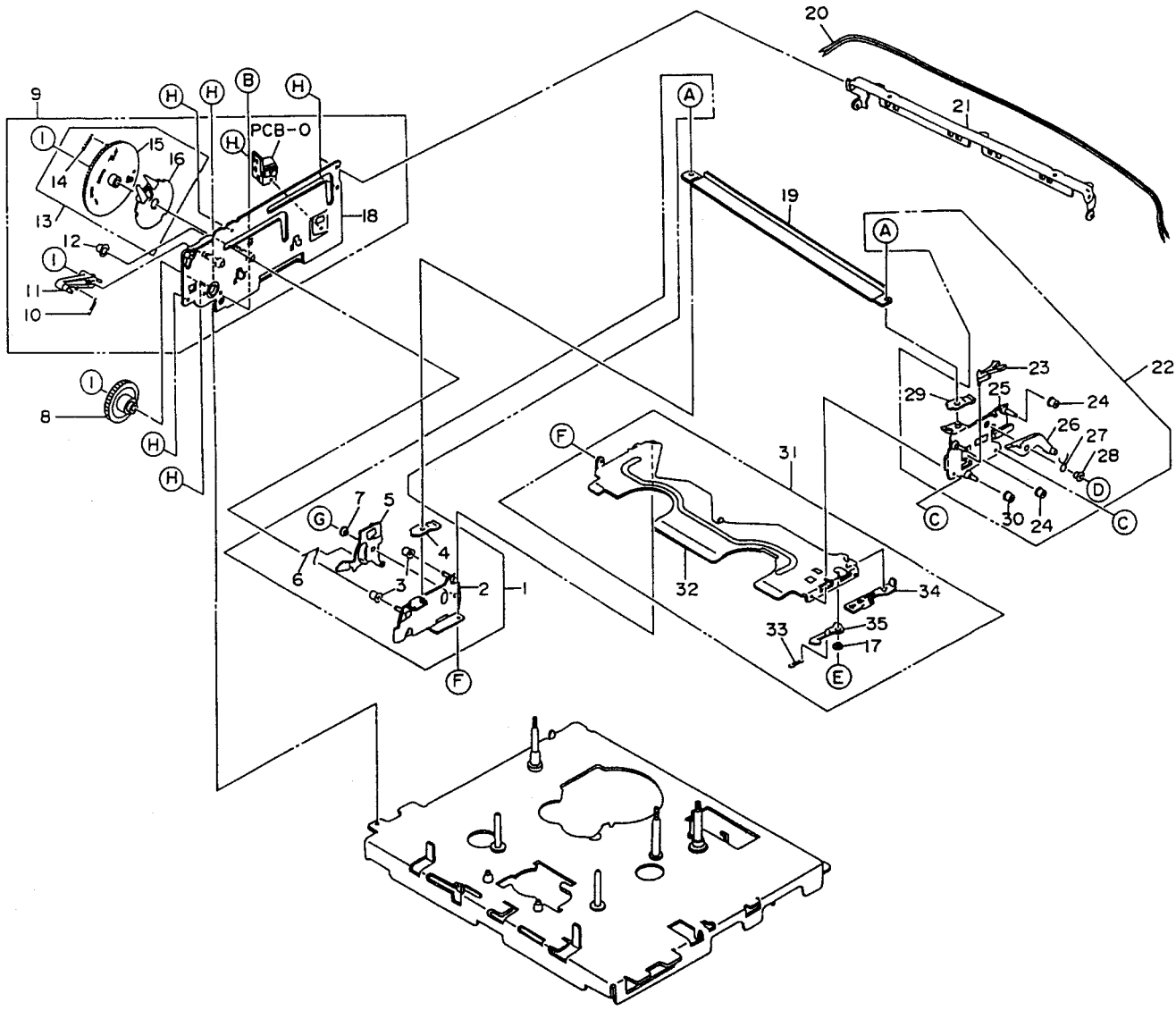
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-096-000-00	TAMS SCREW 2.6×4	D	S9-096-000-00	TAMS SCREW 2.6×4	G	S9-504-000-00	E RING S2.5
B	S9-078-000-00	TAMS SCREW 2×5	E	S9-504-000-00	E RING S2.5			
C	S9-743-000-00	PW CUT 1.6×3.8×0.3	F	S9-192-000-00	C TAPPING SCREW 2.6×4			



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	7-1	*S8-059-160-600	SYNCHRONIZE SHAFT		1
	7-2	---	FRONT ANGLE ASSY		1
	7-3	*S8-059-160-250	TAPE GUIDE R		1
	7-4	*S8-059-160-180	FRONT ANGLE		1
	7-5	*S8-059-160-240	TAPE GUIDE L		1
	7-6	*S8-000-220-070	UPPER PLATE		1
	7-7	*S8-059-160-170	SYNCHRONIZE GEAR A		2
	7-8	*S8-059-163-220	FRAME R ASSY		1
	7-9	---	OPEN LEVER GUIDE		1
	7-10	---	FRAME R SEMI ASSY		1
	7-11	---	GUIDE SLEEVE		1
	7-12	*S8-059-163-180	C LOAD BRACKET ASSY		1
	7-13	---	SENSOR P.C.B RM ASSY		1
	7-14	---	F WORM BEARING A		1
	7-15	---	C LOAD BRACKET SEMI ASSY		1
	7-16	---	IN SW LEVER		1
	7-17	---	S SW LEVER		1
	7-18	*S8-059-163-190	F LOADING CLUTCH ASSY		1
	7-19	*S8-059-163-210	WORMWHEEL ASSY		1
	7-20	---	FRICTION GEAR		1
	7-21	---	FRICTION SPRING		1
	7-22	---	WORMWHEEL		1
	7-23	*S8-059-163-120	LIFT GEAR R ASSY		1
	7-24	---	LP SPRING		1
	7-25	---	LIFT GEAR R		1
	7-26	---	LIFT ARM		1

EXPLODED VIEW – 8

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-833-000-00	SCREW 2.3×2	D	S9-967-000-00	SL SCREW 2×4	G	S9-966-000-00	SL SCREW 2×2.5
B	S9-192-000-00	C TAPPING SCREW 2.6×4	E	S9-968-000-00	SL SCREW 2.6×3	H	S9-096-000-00	TAMS SCREW 2.6×4
C	S9-556-000-00	SCREW 2.6×3	F	S9-991-000-00	SCREW 2.3×2.5	I	S9-504-000-00	E RING S2.5



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	8-1	*S8-059-163-090	SIDE PLATE L ASSY		1
	8-2	---	SIDE PLATE L SEMI ASSY		1
	8-3	---	GUIDE ROLLER		2
	8-4	---	CASSETTE PUSH PLATE		1
	8-5	---	C LCOK PLATE L		1
	8-6	---	LOCK PLATE SPRING L		1
	8-7	---	LOCK PLATE COLLAR		1
	8-8	*S8-059-160-170	SYNCHRONIZE GEAR A		2
	8-9	*S8-059-163-130	FRAME L ASSY		1
	8-10	---	LIFT LEVER SPRING		1
	8-11	*S8-000-220-760	LIFT LEVER		1
	8-12	---	GUIDE SLEEVE		1
	8-13	*S8-059-163-140	LIFT GEAR L ASSY		1
	8-14	---	LP SPRING		1
	8-15	---	LIFT GEAR L		1
	8-16	---	LIFT ARM		1
	8-17	---	COLLAR		1
	8-18	---	FRAME L SEMI ASSY		1
	8-19	*S8-000-220-650	TOP STAY		1
	8-20	---	END SENSOR WIRE		1
	8-21	*S8-059-160-090	REAR ANGLE		1
	8-22	*S8-059-163-080	SIDE PLATE R ASSY		1
	8-23	---	LOCK RELEASE LEVER		1
	8-24	---	GUIDE ROLLER		2
	8-25	---	SIDE PLATE R SEMI ASSY		1
	8-26	*S8-000-220-250	OPEN LEVER		1
	8-27	---	OPEN LEVER SPRING		1
	8-28	---	OPEN LEVER COLLAR		1
	8-29	---	CASSETTE PUSH PLATE		1
	8-30	---	GUIDE ROLLER		1
	8-31	*S8-059-163-060	CASSETTE HOLDER ASSY		1
	8-32	---	CASSETTE HOLDER		1
	8-33	---	LOCK SPRING		1
	8-34	---	SLIDE PLATE		1
	8-35	---	C LOCK PLATE A		1

■ ACCESSORIES/PACKAGE LIST

HV-DK510 GPSKSE

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1	*89-JU6-902-010	INSTRUCTION BOOKLET V	*	1
	2	*87-034-593-010	CORD,RF PAL		1
	3	*87-034-755-010	AC CORDSET ASSY E		1
	4	*89-JU5-638-010	REMOTE UNIT,RC-TG50P		1

HV-G50 IPF

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1	*89-JU5-901-110	INSTRUCTION BOOKLET H	*	1
	2	*87-034-593-010	CORD,RF PAL		1
	3	*87-034-755-010	AC CORDSET ASSY E		1
	4	*89-JU5-638-010	REMOTE UNIT,RC-TG50P	*	1